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CONTENTS.

SUMMARY: —
"On to Richmond."— The Changes in the Programme which we have asked. — The Exhibition Buildings at New Orleans. — Sewage Irrigation at Marlborough, Mass. — A Simple Photolithographic Process. — A New Relief-Plate Process. — The Mulhausen Prizes. — New Process of Extracting Gold. 133
PARIS CHURCHES. — ST. EUSTACHE. 135
THE PLANTIN-MORETUS MANSION, ANTWERP. 137
THE *American Architect* STABLE COMPETITION. — IV. 137
THE PERILS OF UNDERPINNING. 138
THE ILLUSTRATIONS: —
Competitive Designs for a Small Barn. — Palais de Justice, Paris, France. — Porch of St. Eustache, Paris, France. — The Plantin-Moretus Mansion, Antwerp, Belgium. — House, Brookline, Mass. 138
COTERMINOUS EXCAVATIONS. 139
OVERLOADED MASONRY OF COMPOSITE WALLS. 140
SUN-KINKS. 140
AN OLDEN INCOHERENT EXHIBITION. 141
COMMUNICATIONS: —
Pollution of Storage Reservoirs. — A Labor Commission's Report on the City of Pullman. 141
NOTES AND CLIPPINGS. 142

WE are much pleased to find that the experiment we hope to make in the competition for the Richmond City-Hall meets with the approval of architects of the most varied attainments in all parts of the country, and we hope that this simple announcement will cause any architect who may have hesitated to declare himself in favor of the experiment, through fear he might not find himself in just the company he would prefer, to join the movement and lead him to swell, by his own modest contribution, the fund collecting in our hands. To show the spirit in which our proposition has already been met, we select from the many letters before us that of Mr. William A. Potter, late Supervising Architect of the Treasury Department, as coming from a man thoroughly well known and respected. Mr. Potter, at the time of forwarding his contribution to the fund, writes thus: "Your idea must strike any architect who has given any thought to this knotty subject, as it strikes me, as most admirable. . . . Whether I am selected [as one of the 'champions'] or not, pray be assured of my hearty sympathy with you in this movement, and of my earnest wish for your success; for, succeeding, you could render no greater service to the profession." Such endorsements as these — for this is but one of many — ought to convince doubters that the experiment is worth trying, and induce them to join in making the movement the act of every architect in the country. We earnestly ask the active co-operation of all architectural associations, as well as of all public-spirited individuals.

WE have opened the first parallel of our attack on Richmond by explaining the details of our scheme to the city engineer who issues the programme, and asking him to urge the proper authorities to allow the experiment to have a fair trial, and have suggested that the present programme be cancelled as soon as possible, and a new one issued which shall embody the following points: The date to be extended to August 1; the award to be made under the advice of three architects, appointed, one by the city, one by the competitors, and the third by these two, these experts to act with the city's committee; the successful architect to be assured the execution of the building at the regular commission, and the prizes now offered to be awarded to the second and third designs; the awards to be made absolutely and without reservation; with the exception of the prize designs all designs to be returned as soon as a decision has been reached; all designs, rendered in ink only, to be submitted anonymously. If we had supposed the authorities would endure a further delay we would have suggested a preliminary and a final competition, but we understand that from their point of view we have already asked more than they can see the wisdom of conceding. Still, if they will only make these concessions, present indications seem to justify us in promising them that they will receive not only better designs but more of them; while to competitors by the same concessions, if fulfilled to the letter and in the spirit they imply, a perfectly fair and honorable public competition seems to be assured.

THE *Scientific American* gives some statistics in regard to the dimensions of the buildings erected for the New Orleans Cotton Exhibition, which may surprise those who imagine that New Orleans is a poor provincial town. There are thirty-six buildings, large and small, in the exhibition grounds, devoted solely to its purposes, besides ten private structures, and the whole area roofed in is two million eight hundred and twenty thousand square feet, or nearly sixty-seven acres. The Main Building covers one million six hundred and fifty-six thousand square feet, or nearly forty acres. This is about double the space covered by the Main Building at Philadelphia; and the New Orleans building must be one of the most imposing architectural objects ever erected, so far as size and multiplicity of parts can give that distinction. Besides this huge structure, the State and Federal Governments have a building to themselves, covering about six hundred and forty-nine thousand square feet; and the famous Horticultural Hall occupies one hundred and sixteen thousand more. The aggregate of motive power required for driving the machinery on exhibition is said to be the largest ever collected in one place, amounting to five thousand nine hundred and thirty-seven horse-power. This is the more remarkable on account of the situation of New Orleans, which, as the metropolis of a farming and planting region, would hardly be expected to compete in exhibits of machinery with Philadelphia, the centre of the manufacturing interests of the continent. Large as the buildings are, they are filled with exhibits, and twelve hundred applications for space are said to have been rejected after the whole available area had been taken up.

TWO manufacturing towns of considerable importance in Massachusetts have recently entered into a discussion of systems of sewerage suitable for their needs, and in respect to the final disposition of the sewage both have come to the same conclusion, that the application of the liquid to land by irrigation presents more advantages, and fewer disadvantages, than any other method of disposal. One of the towns, Marlborough, has had a report prepared by Mr. E. S. Philbrick, one of the most experienced and cool-headed engineers in the country, which recommends the purchase of about one hundred acres of land, and the utilization of the sewage upon it for the growth of fodder grasses, or similar crops. The cost of the system of sewers, with that of the outfall mains, and the land for treatment, is estimated in the report at one hundred and thirty-five thousand dollars. We have not the details of the scheme, but this seems a small price to pay for anything like a complete system of drainage disposal for a considerable town, and, judging from the experience of Pullman, it is not too much to hope that some return on the investment may be made from the profits of the farm. There is one great advantage about irrigation as a mode of sewage disposal for small interior cities, — that as land suitable for utilization is always to be found within a short distance of the centre of the town, and at a reasonable price, the problem of conveying the collected sewage to the outfall, which is often by far the most difficult and costly portion of the whole work, is reduced to an insignificant matter; and the land purchased for irrigation, although representing a comparatively large investment of money, can always be sold again, if the experiment should be abandoned, at something like the cost, and often at a very great profit; while an abandoned and ruined outfall sewer is without value to anybody.

SOME of our readers may perhaps like to try experiments with a very simple sort of photolithographic process, which we find described in *Le Génie Civil*. As every one knows, all photolithographic processes, as well as those for producing relief-plates by the action of light, are founded on the property which is possessed by bichromate of potash, of combining with gelatine or albumen, under the influence of light, in such a way as to render it insoluble in water. As all amateur photographers with a taste for investigation soon learn, bichromate of potash is acted upon very strongly by light, and in ways which have as yet been but imperfectly investigated, the coagulation of albumen being only one of the phenomena which it exhibits under solar influence; so that experiments with it have an interest which hardly attaches to those with the silver compounds. To apply it to photolithography in the simplest form, the easiest method is to procure sheets of ordinary

albumen paper, and sensitize them by floating them, with the albuminized surface upward, for three minutes, on a bath of bichromate of potash solution, formed with three parts of the salt to one hundred of water; or, if more convenient, by laying them, with the albuminized surface downward, on a clean sheet of glass, and brushing the back liberally with the bichromate solution; taking care in either case not to allow the solution to run over the side coated with albumen, which it would dissolve away. The ordinary albuminized paper is quite spongy, and soon takes up enough of the bichromate solution through the back to bring the albumen into the necessary condition without injuring the surface. As soon as the sheet is evenly saturated with the solution it is hung up and thoroughly dried.

TO prepare a plate for printing by means of this paper, a sheet is placed under a negative in the usual way, and exposed to the sun during such time as experience may show to be suitable. The paper is then taken out of the frame, laid, face upward, on a sheet of glass, taking care to hold the edges down in some way, and the whole covered, by means of a roller, with lithographic transfer ink, until it is uniformly black. The sheet is then immersed in cold water, which gradually dissolves the portions of the albumen surface which have not been acted upon by the light, and loosens the coating of ink over those portions, allowing it to float away, while the ink over the places which the light has touched remains firmly attached to the albumen there coagulated and rendered insoluble. The process of soaking off the unchanged albumen, and disengaging the picture, is rather a long one, but it can only be hastened by brushing away the loose ink at the risk either of smearing the picture, or of rubbing out the finer lines. The next step is to transfer the paper proof to the lithographic block, which is usually a sheet of zinc, in place of a stone. The zinc plate is prepared for the transfer by vigorous rubbing with a hard brush and a ten per cent solution of sulphuric acid, followed by polishing with pumice-stone, a dip into a three per cent solution of nitric acid, and a final washing with clear water. The paper proof, which has been kept between two sheets of wet blotting-paper, is then laid face downward on the zinc plate, and pressed firmly two or three times under the lithographic press. If this is properly done, the picture is transferred to the zinc; but before printing from the plate it is necessary to treat it with a decoction of gall-nuts, slightly acidified with nitric acid, which turns the zinc, between the ink lines, to a bluish color, and gives it the property of repelling the greasy lithographic ink. The plate is then ready for use, and as many impressions as necessary may be taken from it.

ANOTHER process, by which tracings, or transparent drawings can be transferred by the action of light directly upon the zinc plate, without the intervention of a negative, or of any bichromate of potash or albumen, employs bitumen of Judea as the sensitive agent. The zinc plate, after cleaning and polishing, is treated with the gallic-acid solution mentioned above, which, to be more exact, is made by boiling two hundred and fifty parts by weight of pulverized gall-nuts in five thousand parts of water, until the whole is reduced to two-thirds the original bulk, filtering through cloth, and adding fifty parts of nitric acid, and three parts of chlorohydric acid. This solution gives to the whole of the zinc plate the property of repelling lithographic ink; but this property may be removed by acetic acid, and on this action of acetic acid the process depends. To render the plate sensitive, it is covered with a thin varnish of bitumen of Judea dissolved in naphtha, at the rate of one part of bitumen to twenty-five of naphtha, which is allowed to dry. The tracing to be copied is then laid on the plate and exposed to the light, which renders the bituminous varnish insoluble in spirits of turpentine, except where shaded by the lines of the tracing. It is then necessary to immerse the plate in spirits of turpentine, which dissolves the varnish from the lines of the picture, and exposes the metal in those places. After washing off the turpentine with water, a solution of five parts of acetic acid in six parts of water is applied to the plate, which, reaching the metal through the lines left bare by the solution in the turpentine of the varnish over them, renders it in those places capable of retaining the oily lithographic ink. Another washing with water is followed by the removal of the whole of the varnish with naphtha, and the plate is then ready for the press, the lines acted upon by the acetic acid being the only portions which will retain the ink from the roller.

THE Société Industrielle de Mulhouse in Alsace offers for this year thirteen medals and prizes for essays and inventions of various kinds, many of which are to have some relation to the improvement of the condition of the working-people for whom this renowned society has done so much. The first prize, of five hundred francs and a medal of honor, is offered for plans for working-men's houses superior in convenience and economy of construction to those hitherto in use; and three other medals and prizes are assigned as rewards for the invention of devices for guarding workmen against accidents caused by machinery in motion, by belts and shafts, and by circular or band saws. The apparatus which, it is hoped, may be invented for the latter purpose is described as a "pusher," to be held in the workman's hand, and used to guide the wood to be cut against the teeth of the saw. It is obvious that such a utensil must be very manageable and flexible to take the place of the delicate and nervous human hand, but so many scores of men are every year maimed by the slipping of a bit of wood, the deviation of a saw-blade, or an incautious movement, that a practicable method of obviating the risks from such occurrences would be of inestimable value. Another medal is offered for an invention for the automatic feeding of steam-boiler furnaces, probably with the charitable intention of releasing for higher uses the men now engaged in this exhausting and unintellectual occupation. Under the head of hygiene, a medal is offered for the best essay setting forth in a striking and effective manner the evil influences of alcoholic drinks; and under "fine arts" a medal and prize are offered for essays on the practical utility of a knowledge of drawing in the manual professions, and on the best modern methods for imparting that knowledge.

WE suppose that most of our readers know something of the operation of extracting gold from the ore, and will be glad to learn that a process has been recently invented which has proved far more successful than any hitherto in use for preventing the waste of gold, amounting usually to about one-half of the whole quantity contained in the ore, which takes place under the old methods in the process of extraction. As every one knows, most of the gold now obtained is found in slender veins or specks in a matrix of hard quartz. To separate the small particles of metal from the matrix, the quartz rock is pulverized in a stamp mill, which reduces it to a powder fine enough to pass through a sieve having two hundred and twenty-five meshes to the square inch. This coarse powder, which is kept wet in the stamp mill, is then intimately mixed with mercury, which dissolves out the gold and silver from the mass. The mercury having the metals in solution is then separated from the quartz dust, which is thrown away, and by distilling off the mercury the gold or silver is recovered in a pure state. The principal defect of this method is that the powder of the ore is not fine enough to yield up all its gold to the amalgamating mercury, and much of the precious metal, contained in tiny points embedded in the midst of the coarser quartz particles, is entirely lost. The new process, therefore, improves upon the old especially in this particular, and, by means of a different method of pulverization, obtains a powder fine enough to pass through a sieve of eighty-one hundred meshes to the square inch. No water is used, as with the stamp mills, and the mixing of the fine powder with mercury is thus rendered much easier than the old form of amalgamation, which was often seriously checked by the "killing" of the mercury by the water. The presentation of the powdered ore to the mercury is made in an ingenious way, by throwing the dust by centrifugal force into the bottom of a cylinder thirty inches high, filled with hot mercury. The ore floats on mercury, and rises to the top, the metal contained in it combining with the liquid on the way. When the dust reaches the surface it is subjected to the action of a strong current of air which blows it into a long shaft. Here it separates, the lighter particles, which contain no gold, being blown entirely out of the building, while those to which gold clings, as well as particles of pure gold, amalgamated by the mercury, but not dissolved, fall into boxes prepared for them. According to *Le Génie Civil*, all the gold and silver in the ore is by this process saved, while the cost is no greater than that of the old process, the new pulverizers reducing the ore to a fineness forty times greater than that obtained by means of stamp-mills, at about four-fifths the cost.

PARIS CHURCHES.

ST. EUSTACHE.

ST. EUSTACHE, though by no means one of the oldest of the Paris churches, is, after Notre Dame, the largest. In plan, arrangement and size it is Gothic in style, but all its details are Renaissance. It has double aisles, octagonal shafts with Classical pilasters, round-headed arches, and curvilinear tracery. It was commenced in 1532 and finished in 1641, the original plan having been carried out in most of the details. But tradition gives a much earlier date for the original church, which was dedicated to St. Agnes, the co-patroness of the present church. It appears a chapel was erected here at a very early date, upon the site of a temple consecrated to the goddess Cybele — l'abbé Le Beuf says in 1200, but he does not mention a quaint account of its origin, which is recorded by Gilles Corrozet, the first of the Paris historians. "A certain *bourgeois* named Jean Alais, in consideration of his help in financial matters, obtained from the king the right to levy a tax of a penny upon every basket of fish sold in the Halles. Remorse overtaking this publican, he obtained the revocation of the tax; but the victims gained nothing by the repentance, as another was allowed the same privilege. Thereupon Jean Alais founded a chapel in expiation of his sin, and, dying, begged to be buried therein. A stone was placed hard by, which, becoming a stepping-stone for passengers in rainy weather, acquired the name of Pont-Alais."

Thus the legend; but the chapel is mentioned in authentic documents in 1213, when it was said to be situated on the ground belonging to St. Germain l'Auxerrois, at a little distance from the cemetery of the Holy Innocents, and on the road to Montmartre. In 1223 it is mentioned in a charter as the church of St. Eustache. L'abbé Le Beuf mentions that, in consequence of the increase of the population at that time, it was enlarged and almost entirely rebuilt, but no accounts remain of this first structure. In 1429 the high altar was advanced, and that of St. Gregory destroyed, to make a passage to the crypt of St. Agnes, which still exists as a cellar to a neighboring fruiterer, but which the clergy hope to acquire the possession of, as soon as the lease runs out. The last mention of the old church was in 1495. The only reason for joining the name of St. Eustache to that of St. Agnes as patron seems to have been the translating of some relics of the sainted hunter, preserved at St. Denis to this church.

St. Eustace was a Roman soldier and captain of the guards of the Emperor Trajan. His name in early life was Placidus, and he had a beautiful wife and two fine sons. He lived in great style, practised all the heathen virtues, notably those of charity and loyalty, and was not only a great warrior but withal a great huntsman. Now it happened one day, while hunting in the forest, that a beautiful white stag appeared before him, having a cross of radiant light between its horns, and on the cross an image of the Redeemer. Being astonished and dazzled by the vision, he fell upon his knees, and lo! a voice came from the cross and cried to him: "Placidus, why pursuest thou Me? I am Christ, and thou hast hitherto served Me without knowing Me? Dost thou now believe?" And Placidus fell with his face upon the ground and said, "Lord, I believe!" And then the voice said: "Thou shalt suffer much for My sake, but I will not forsake thee." Then replied Placidus, "Lord, I am content; do Thou but give me the patience to suffer." Then he arose and returned to his wife, and next day he and his family were baptised, he taking the name of Eustace. Then came tribulations and sorrows. He lost his possessions by robbers; pirates carried away his wife; and one day, in crossing a river, having first carried over one child and laid it on the bank, to fetch the other, a wolf seized it, and turning round, he saw a lion carry off the other. And so being weary and sad, he prayed for resignation, and abode in a village quietly and unknown for the space of fifteen years. But when the Emperor Adrian came to the throne, he sent out messengers to search for him far and near, and at last they found him, and he was restored to all his former honors. But his heart was sad for the loss of his wife and children. . . . Meanwhile his sons had been rescued from the jaws of the wild beasts, and after many years both they and his wife were restored to him, and his heart was exceeding glad, and he thought all his sorrows at an end. But it was not so, for the Emperor desired a great sacrifice to be made to the gods, in consequence of a mighty victory he had gained over the barbarians, and Eustace and his family refusing to offer incense, they were shut up in a brazen bull, and a fire being kindled under it, they all perished together.

The legend of St. Agnes is too long to relate here, and doubtless is known to most persons. It is one of the oldest and one of the most authentic. St. Jerome, writing in the fourth century, tells us that in his time the fame of this childish saint was spread through all nations, and that homilies and hymns in her honor abounded. There is a charm in most of the legends of the Christian saints and martyrs, but in none of them more than in that of St. Agnes. Her youth (she is supposed to have been but thirteen years of age), her beauty, her innocence and her courage have invested her with an interest and a vitality which is second to that of no saint. But why the church we are considering was dedicated to her, we have no means of knowing.

The first stone of the present edifice was laid by Jean de la Barre in 1532. Le Beuf gives Charles David as the name of the architect. Certainly there was an architect of that name whose epitaph records that he superintended the works of the church. But as he died in 1650, at the age of ninety-eight, he could only have been born in 1552; the church was therefore begun twenty years before his birth, and he could only have carried out the designs of a predecessor. Some persons think this may have been Dominico da Cortona (Boccadoro), the architect of part of the Hôtel de Ville, and certainly there are portions of the church which recall some of the details of Boccadoro's façade. It is curious that a few years after the church was finished its "barbarous style was said to shock peoples' eyes," and consequently the west door was demolished and the present clumsy, semi-Classical one erected in its stead by Mansard de Jouy, in imitation of the façade of St. Sulpice. Happily the rest of the church being finished, it was left as it was. There is an old engraving of the original west front, and it is hoped by many that a restoration may before long take place, the intention being to demolish the present incongruous masonry and put it up in some more suitable position, as for instance at St. Nicholas du Chardonnet, in the Rue Monge, a church which has no principal entrance. When Mansard erected the present west end he destroyed two chapels which had been decorated, at Colbert's expense, by Mignard, and Lafosse, a pupil of Le Brun's, thus reducing the length of the nave, and so giving cause for the objection many persons make to the proportions of the church — that it is too high for its length.

Formerly St. Eustache was a royal parish, and in its neighborhood lived many of the nobility. Cardinal Richelieu inhabited the Palais Cardinal, now the Palais Royal; Cardinal Mazarin had a hôtel in the Rue Neuve-des-Petits Champs; and the Duc d'Epernon in the Rue Platrière, since called Jean-Jacques-Rousseau, after the poet, who lived on the fourth story of No. 49. The *curés* were often cited to preach before royalty, and one Jean Lecoq seems to have been so influenced by the Reformed doctrines that François I was thereby somewhat disturbed in his mind, until reassured by the Cardinals de Lorraine and de Tournon. Another *curé*, René Benoist, was a celebrated preacher during the League. Arriving quite young in Paris, he was received into a theological school called the Société Royale de Navarre. He became Mary Stuart's confessor, and followed her to Scotland after the death of her husband, François II. After his return to France he became *curé* of St. Pierre des Arcis, and subsequently of St. Eustache. Being favorable to the League, he was surnamed by that party the *Roi des Halles*, and upon the assassination of the Guises at Blois, he made a sort of funeral oration; but when the party gave way to excesses he abandoned it, and thereby called down their vengeance, and was renamed the *Diable des Halles*. He was present at the abjuration of Protestantism by Henry IV, at St. Denis, and was appointed subsequently to the bishopric of Troyes. On the death of the successor of Jean Benoist, a tumult seems to have arisen, caused by the nomination of a stranger to the *cure*, instead of the late *curé's* nephew. The whole population of the quarter rose up in anger, put the soldiers to flight, and installed their pet pastor. The disorder lasted three days, and a deputation of the Dames de la Halle interviewed the queen upon the subject. The speech of the leader is curious. She points out that the late curate was so good, that having on his death-bed designated his nephew as his successor, it is not fair to give us another. "*Les Marlin, voyez-vous, depuis bien longtemps, sont curés de St. Eustache, de père en fils, et les paroissiens n'en souffriront pas d'autre.*" The queen gave an evasive answer and the tumult continued, even to the putting up of barricades. However, the archbishop gave way after a time, and Marlin succeeded his uncle amidst cries of "*Vive le Archevêque!*" and "*Vive la Reine!*" but what was perhaps more significant was the placarding of the church with the following notice: "*Avis. Le Curé de St. Eustache est à la nomination des Dames de la Halle.*" The importance of these ladies is as great now as in the seventeenth century, for during the Commune, when Archbishop Darboy, l'abbé Duguerry and other priests were taken prisoners, the *curé* of St. Eustache, l'abbé Simon, owed his safety to les Dames, who faced the insurgent authorities and commanded his release.

Louis XIV made his first communion at this church, and Madame d'Aubigné (afterwards Mme. de Maintenon) was in the habit of attending matins here at two o'clock in the morning. Degenerate times these! When does one hear matins at all? Certainly not at 2 A. M. A grand funeral oration was delivered here in honor of Anne of Austria, by Père Senault, and ten years later the king and all the court were present at another in glorification of Turenne. Fléchier was then the preacher, and no words seem too great to sound his praises as a soldier, a man and a Christian. A curious anecdote is told of Massillon, who often preached at St. Eustache. In 1704 he delivered his celebrated sermon upon "the small number of the elect," and when he pronounced the sentence of the Sovereign Judge, so great was the effect that the whole congregation arose, stricken with terror. The Fête Dieu (Corpus Christi) processions were very magnificent. An account of one during the minority of Louis XV (now preserved in the archives) gives a list of lacqueys with torches, footmen, pages, the preceptor of the Duc d'Orléans's pages, régent "in long robe and surplice," banners of confraternities, Swiss, drummers, the clergy, and immediately thereafter the dais covering the Blessed Sacrament, the Duc d'Orléans bearing a taper, followed by his carriage, his servants, soldiers, etc.

Every year the "*reposoir*" in the Palais Royal attracted all Paris. In 1836 it was constructed from drawings by the Italian Servandoni, the architect of St. Sulpice. In 1791 Mirabeau's body was placed here for a time and an oration pronounced over it by Cerutti; in the evening it was transferred to St. Geneviève (Panthéon). A feminine club was established here during the Revolution, but so great were the excesses practised that the Comité de Salut Public closed it. In 1793 the fête of the goddess of Reason was celebrated here, as at Notre Dame. The interior of the church was converted into a representation of the country, with here and there cottages, and little paths leading to them through ravines and grottos. Tables full of viands and drinks were placed all round the choir, and every kind of vice reigned supreme. The high altar, partly composed of porphyry and gold columns, the bronze statues, the pulpit, the pictures, the tombs, all that was artistic and destroyable was destroyed; but in 1795 the church was partly restored to its proper uses, although at first the *curé*, l'abbé Poupart, was compelled to share it with the theophilanthropists and municipal councillors. Pope Pius VII visited St. Eustache and was present at a mass which was rendered as grand as music and ceremonial could make it, and blessed the new statue of the Blessed Virgin, the work of the sculptor Pigalle.

Amongst the persons buried in St. Eustace are many artists and musicians, Rousseau, Lafosse and others; Colbert, also, whose tomb is intact. Molière and La Fontaine were buried in the parish cemetery, now the Marché St. Joseph. Molière was born in the parish, near the corner of the Rues St. Honoré and Pont-Neuf.

The exterior of the church is a fine example of the Renaissance style of François I, and the south door is particularly rich in detail. The voussoir contains niches for fifty statuettes. Above the doorway are two rows of galleries surmounted by a rose-window, and crowned by two turrets on each side of the pointed roof. In the intersection of the cross is a lantern supporting a light, elegant little *flêche* containing the bell. Flying-buttresses, springing from the exterior walls, support the nave, apse and transepts. At the east end is a *chevet*. All this end was terribly knocked about during the Commune, and the clock-tower had a narrow escape from complete destruction. Curiously enough the bell of the clock had been allowed to remain by the first revolutionists, for its utility. The north door was not constructed until 1640, and is very inferior in style. Some statues have lately been placed there during the restorations after the Commune.

The effect of the interior of the church is grand in the extreme, particularly on any great festival, or during the evening services of the Fête Dieu, when the entire east end is ablaze with candles. It is three hundred and forty-one feet long by one hundred and nine feet high, and has double aisles, out of which open numerous chapels. The shafts are octagonal and the roof is groined. Above the triforium is a clerestory filled with stained-glass by Cartaux. The *banc d'œuvre* (seat for clergy and assistants during sermon) is a fine specimen of wood-carving. It is in the form of a Greek portico supported by Ionic columns, and ornamented with figures of St. Agnes and angels. Its preservation during the first revolution was due to the accident that above the medallion at the back is a Roman fascine, crowned by laurel leaves, which, being a republican symbol, saved the entire work from destruction. It was carved by Lepautre, from designs by Cartaux. The pupit is modern, replacing the original, which was designed by LeBrun. The organ, re-erected in 1854, is very fine, and its case a real work of art. It is ornamented with heads of cherubim, and statues of David, Saul, and St. Cecilia, by M. Guillaume, the eminent sculptor. The sanctuary is paved with colored marbles in geometrical patterns, which were laid some few years ago; but the wood-work of the stalls is old, bought in 1795, for five thousand francs, and formerly in the Convent of Picpus. The altar is of Paros marble, designed by M. Baltard, and though not of the best proportions, is fine in general effect. Before the Revolution there was a reredos of stone said to have been sculptured by Daniele da Volterra. This bas-relief is now in the Renaissance museum of the Louvre.

All the east end as far up as the triforium has been repainted, in accordance with the original design, and the general effect is peculiarly rich. Some of the frescoes are by the seventeenth-century painters, but most of them are modern, those in the chapel of St. Andrew being the work of Theodore Pils. At the side of the Lady Chapel is a charming staircase leading up to the Chapelle des Catéchismes, with a handsome balustrade of wrought-iron, of the reign of Louis XVI. The Chapel of St. Louis of Gonzague (entered by an equally fine iron *grille* of the same period) contains a fine statue of Colbert, from designs by Le Brun. It is a black marble sarcophagus, upon which the minister kneels, with clasped hands, and vested in the rich costume of the order of the Holy Ghost. At the foot of the monument are sitting figures of Religion and Abundance. Religion was the work of Tuby, but the other figures are by Coysevox. The expression of the face of Colbert is fine, and the hands and drapery exquisitely modelled. During the Revolution the monument was transported to the Petits-Augustins Museum, but in 1801 it was restored to St. Eustache. A confessional of the period of Louis XV, in the Chapel of the Magdalen, should not be passed over. The frescoes in this and the Chapel of St. Vincent de Paul are attributed to Simon Vouet and his pupils; they bear the date, 1634. The gallery above the sacristy door is fine Louis XVI work.

Amongst the treasures of St. Eustache are an ivory crucifix in the sacristy; a bone of the patron saint, given in 1660 by Pope Alexander VII to Sieur Chauvin; a tooth, formerly in the church of St. Jacques-l'Hôpital; and some bones and linen formerly enveloping the relics. A curious manuscript in the possession of M. Boblet records a list of masses to be said in the church, and amongst them one called the *pic voleuse*, which was to be celebrated every day, at four o'clock in the morning, for the repose of the soul of the poor serving-maid who was unjustly accused of stealing the spoon which was afterwards found in the roof of the church, carefully placed there by the wicked magpie. Surely the guilty bird and not the innocent maid ought to have been the object of the prayers. So much has been said against the Communists (and with justice) that a trait in their favor ought to be related. The day the l'abbé Simon was arrested he had three thousand francs in his pocket, which were destined to pay for the marble pavement of the choir. Of course upon his arrival at the prison they were given up to the police, and were not restored when the *curé* was released. On Easter-Monday, however, Raoul Rigault's secretary went to the sacristy, asked M. Simon if the money had been returned, and finding that it had not, he left the church, to return in an hour's time, with the three thousand francs intact.

No one should omit visiting St. Eustache on St. Cecilia's day (November 22), when a grand mass is always performed, with full orchestra, in aid of the Society of Musicians; and indeed any Sunday the music is quite well worth hearing, and the ceremonial is the finest in Paris. At the same time much has been lost by the substitution of the Roman for the Parisian rite, which took place in 1876. In the former, two acolytes swing censers; in the latter, four or six acolytes threw them up high five times, the sixth time catching them while kneeling on one knee. The grand effect of this ceremony can never be forgotten by those who saw it. St. Eustache has also been shorn of some of its interest by the death, some few years ago, of its great organist, M. Batiste. Perhaps no one has ever brought sweeter sounds out of an instrument, and certainly no one's playing was ever so pathetic and touching as M Batiste's. The organ has four manuals, four thousand three hundred and fifty-six pipes, seventy-eight stops, and twenty composition pedals. In the south transept is a little Gothic statue of St. John, and on the wall is a sad memorial of the names of all the hostages who suffered death under the Commune, headed by the Archbishop (Darboy), the *curé* of the Madeleine, Duguerry (formerly *curé* of St. Eustache), and the abbé Simon. Some of the glass dates from 1631, but it is not remarkable for beauty.

S. Beale.

Deterioration of Paintings in the Louvre Galleries. — A sad discovery has been made in the Louvre gallery by M. Gruyer, the curator of the painting department. It seems that upwards of sixty canvases, including works by Rubens, Scheffer, Prud'hon, Gérard, Flandrin, Mignard, Lesueur, Delacroix, Rigaud, Patel, Hein, and other masters, are seriously, some of them irretrievably, injured by either moisture, dust, and the hot-air furnaces, combined with defective ventilation. — *American Register, Paris.*

Brick-boring Bees. — A curious discovery was made at the Brighton Railway Works on Thursday last during the removal of an old wall. In the midst of some of the bricks were found some bees, lodged in compact cells; and, as the wall had been known to be in existence for about forty years, it was assumed that these bees had remained in their prison during that long period, just in the same way as a toad is popularly accredited with being able to exist in a stone for an indefinite number of years. Some of the bees and a couple of pieces of brick containing their cells were shown to the members of the Brighton and Sussex Natural History Society on Thursday evening by Mr. B. Lomax, who explained that the curious insects, which were rather smaller than a bumble bee, were what was known as "boring bees." They had, in fact, the power of excavating a cell in a brick, and then, after lining it with a kind of mortar, of closing up the hole communicating with the outside with a clay made of the brick-dust, in such a manner as to leave little or no trace outside of any aperture having been made. This work was performed by the female bee, who, after depositing an egg in a cell, with some honey, closed it up after her in the manner indicated, leaving the young bee in due course to cut its way out. — *Timber Trades Journal.*

THE PLANTIN-MORETUS MANSION, ANTWERP.

NICHE, CHURCH LA DALBADE TOULOUSE, FRANCE. XVI. CENTURY.

BELGIUM is full of good, typical examples of late Gothic and early Renaissance architecture, both religious and civil in character, but the remaining specimens of domestic architecture are so few in number that they are mostly regarded in the light of monuments, and are cared for by the Government accordingly. Aside from the old Bishop's palace at Liège, which really partakes more of the nature of a public building than a bishop's residence, probably the best example of sixteenth-century Belgian private architecture is found in the Plantin-Moretus mansion, in Antwerp, which was built about 1575, for a printer named Christopher Plantin, a man apparently of a busy, pushing disposition, who accumulated a large fortune in his business, being greatly helped thereto by valuable monopolies granted him from the then all-powerful Spanish crown, to print the Bibles and prayer-books for use throughout the country. Those were the days of the great trade guilds, when a man's best title to consideration was success in business, and we find the old printer occupying a high place in the municipal affairs, and forming connections in the highest quarters. On his death, he was buried in the aristocratic church of St. Jacques, the family monument commemorating his name and virtues having been designed by Rubens, as an inscription testifies. His son-in-law, Moretus, succeeded to the business, which was carried on in the family mansion by himself and his descendants until as late as 1800, when the establishment lost some of its most valuable privileges, and the business dying out, the house remained almost unoccupied for nearly seventy-five years. The city government finally purchased the entire property, including the furniture, pictures, and printing appliances. The premises have been carefully restored, and as most of the fittings date from the sixteenth century, the house can now be said to present about the appearance it did in the time of Christopher Plantin. It is open to public inspection as a museum, and is as interesting and true a type of its kind as can be found anywhere. At the time it was built, Antwerp ranked second to hardly any city in Europe, and the excellence of the public taste of the period is shown by the rich Flemish tapestries, the fine carvings, and the stamped Spanish leather which were so freely used throughout the house. There are also preserved some ninety family portraits, mostly executed during the best period of Flemish art, including a number by Rubens and Van Dyck.

In looking over the house it is interesting to note how little some ideas of domestic architecture have changed during the past three centuries, or to speak more properly, how modern ideas have returned to old standards. Nearly all of the finish in the Plantin-Moretus mansion could be copied exactly in a Back Bay or Fifth Avenue house, without provoking attention by any deviation from the existing styles, though this old work has a quaint, mediæval air about it that would hardly be reproduced on the other side of the Atlantic. In plan the house consists of three stories grouped about a rectangular court. The exterior of the building is quite uninteresting, but the court-yard presents a very pleasing appearance, with its open arcades, high mullioned windows, and brick and stone dormers. The offices and private apartments of the old printer are in the portion of the building shown in the sketch. On the left are the waiting, proof and book rooms, above which are a number of reception-rooms, all richly hung with tapestries and stamped leather, and containing some very good oak furniture. On the farther side of the court are the composing and press rooms, with the old hand-presses, type-cases, and everything left intact and ready for work to-morrow, should the old printers return to claim their own. On the right of the court-yard are the society rooms, parlors, etc., with a well-stocked library in the upper story. In the attic of the portion represented in the sketch is a cosy den where Plantin made his experiments in inks and type-metals. Below, on the farther side, is a bedroom, with a richly-carved bedstead, the cornice of which is shown in the sketch. Adjacent is a quaint little gem of an ante-chamber, the walls all aglow with rich stamped and gilded leather, the ceiling crossed by heavy oak beams black with age, one side of the room filled by a large mullioned window set with small, leaded squares of dingy glass, the other side having a small bay and cosy seat projecting into the main hallway, which passed by on a lower level. The hangings and upholstery of these rooms are mostly of heavy brocaded silk, all the pieces dating from the sixteenth century, while many of them actually served their present purpose during the time of Christopher Plantin. In finish and effect they compare very favorably with the best work of the present time. The floors throughout are of oak, waxed thoroughly until they are as smooth as glass.

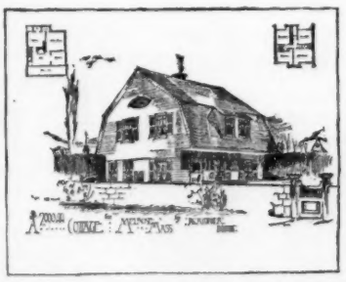
In one of the halls is a very interesting collection of old prints and copper engravings used by Plantin and Moretus in their works, including some very excellent line engravings made from Rubens's most celebrated paintings. There are also several sets of curious initials, some of which were designed by the great painter, who appears to have been a friend of the family, though not above occasionally making designs for types, and taking pay for it, too, as is shown by some signed receipts which can be seen in one of the rooms.

A visit to this old mansion well repays the student or artist; indeed it is unique of its kind, and with the cathedral is almost all that remains to show the mediæval luxury and artistic taste of the now modernized city.

C. H. B.

THE *AMERICAN ARCHITECT* STABLE COMPETITION. — IV.

THE JURY'S AWARD.



"*VITRUVIUS, JR.*"— Plan good. Two living rooms in loft unnecessary. Hay-loft too small and crowded. Carriage-room would also probably be crowded. Exterior chimney peculiar. Hood over carriage-door unnecessary. Ventilator boxy and small; should be over main ridge. Eaves too much cut up. Rendering hard and dry.

"*Pickwick.*"— Waste room in carriage-room. Plan otherwise good. Exterior walls too high to eaves, and first story too high. Windows unnecessarily large. Plaster-work in gable over carriage-room door unnecessary. Mass simple. Details simple. Rendering thin; lacks shadow, and is spotty.

"*Minimum.*"— Coach-house bad in form; allows very little room for carriages to be moved. Water-closet occupies too much room; so does fuel. Exterior: Flat dormers are always unpleasant, unless used alone without contrasting with other forms, or used in a row. Projection over hay-door needs study; it is too prominent. Main door should not cut up through belt-course. Eaves lack projection. Rendering hurried.

"*Private.*"— Much waste room in plan. Harness-room inconvenient. There should be stall hay-chutes. Roof too much cut up. Bracket detail is a curious compound of a heavy stick and very slight lattice-work — too much contrast. Roof over hay-door peculiar but not picturesque. Rendering too much all-over and labored.

"*The White Horse.*"— Plan good. Harness-room too large. Exterior needs study in proportion; mass is simple, but ventilator is too large; windows are poorly proportioned; arched head to carriage-house door is not agreeable. Stall-posts have an excellent turning. Rendering is weak.

"*Wheelwright.*"— Plan good. Cow-pen would have been better placed at the end. There should be stall hay-chutes. Exterior is uncertain whether to adopt pyramidal treatment or long roof, and does neither. Ventilator is too high. Details are good. Stall-post has good turning. Rendering is a little uncertain; lacks firmness.

"*The Author.*"— Harness-case inconvenient. Cow-stall should be separate. Exterior is unsuccessful: Walls are too high; ventilator is too high; roof over hay-door too slight pitch; it would have been better to have made a gable over hay-door. Ventilator is too high and needs study; and a ventilator with chimney carried through is very difficult to make successful in point of design. Rendering good.

"*Cuyahoga.*"— Plan is bad, especially the entrance to carriage-house being set in an angle. There is also much waste room. Harness-room is too large. The angle at which carriage-house door is set seems to have been an intentional attempt at unusual effect, and as such is fatally successful. It cuts up the entire mass of the building and makes the problem of roofing particularly hard and particularly unpleasant. Open timber-work with plaster between should only be done in reality, with heavy hard-wood beams, as in the European examples. To imitate it is like all other imitations — unsuccessful. Rendering is careful but labored.

"*Good Luck.*"— The plan is very good but not at all economical. Mass simple. Eaves lack projection. Walls seem too high and stable too boxy in consequence. "*Good Luck*" has a particularly vicious method of rendering elevation and perspective; very spotty, and losing all sense of masses of shadow or tones of light and shade.

"*Virtus sola honorum corona.*"— Plan is absurdly complex for a $1,500-stable, and has not the virtue of being convenient. False open-timber work has been criticised already in "*Cuyahoga's*" design. As the plan is so cut up the roof is necessarily the same. Rendering is careful but very labored.

"*T-Square.*"— Plan is fairly good. Exterior is very bad. Roof

all cut up. Ventilator too small. Details commonplace. Chamfered work should only be used in very small quantities on heavy beams or sticks, and the chamfers should be small and carefully studied. Stained glass in a carriage-room door is slightly incongruous. Rendering scratchy.

"*Try-Angle.*"— Brick stable too expensive. Carriage door should be towards right, to allow carriage to be driven in while others are in carriage-room. Man's room too large. Ventilator too large. Windows too large. Rendering needs outlines.

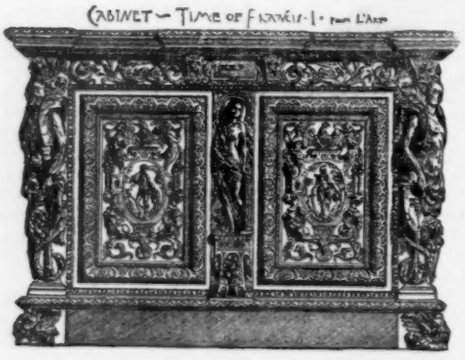
"*Try.*"— Stable much too large. Walls too high. Waste room in plan. Ventilator too large. Details too elaborate and too many V-cuts and turned rosettes, than which there is nothing worse in wood so-called architecture. Rendering very scratchy.

"*Owner.*"— Much too large in apparent mass; looks like a house. Windows of bad proportion. Two rooms for man unnecessary; plan otherwise sufficiently good. Cresting is an abomination. Rendering is too much "all-over."

"*Con.*"— Plan is good. The weak point of this design is its roof, which is too much cut up. Ventilator is too large. Details carefully drawn. The finial needs study. Rendering is careful — a little too careful; lacks freedom.

"*Ghinx.*"— Plan poor. Stalls should never open into carriage-room. Much waste room. Entire exterior very badly cut up, both in walls and roof. Details crude and commonplace. Rendering careful but labored.

THE PERILS OF UNDERPINNING.



UNDER this title we recorded last week the result of an action to recover damage in compensation for injuries received through negligence on the part of defendant. The circumstances were as follows: The defendant in the action employed the plaintiff, a bricklayer, to do certain work on defendant's premises, who personally superintended the work. He was to underpin a wall with Portland cement. The wall was underpinned nine feet, but as this was not considered sufficient, the defendant gave orders to underpin another eighteen inches, which was excavated to the whole length of the wall. While the plaintiff was engaged in the operation of pinning up, the wall came down, breaking his legs, and necessitating his confinement in a hospital for fifteen weeks. It is almost needless to say the jury found a verdict for the plaintiff, assessing damages at £100. There was an obvious case here of negligence. The wall having been underpinned nine feet, an extra eighteen inches was ordered, and the navvies had actually excavated the entire length of wall to the required depth. Two lessons are to be drawn from the occurrence. Mechanically, the risk of undermining a wall, or taking away its support even on one side, is great, and incurs serious danger, notwithstanding which we find bricklayers ready to risk their lives upon the most foolish assumption. They often think an old wall will bear any amount of cutting about, and that it is self-supporting. Not long ago we examined a party-wall which had been excavated along its whole length on one side below the footings. What occurred may be easily imagined. The lessee of the adjoining house suffered much in consequence. The walls throughout the house were seriously cracked, and the settlements threw all the sash-frames and cupboard doors near the side wall out of square, so that they could not be opened or closed. The staircase walls showed large fractures, the steps of stone were cracked, and the sills of windows and the papering and plastering were also fractured and torn. The whole wall, which was a heavy one, had sunk, owing to the lateral resistance of the soil below the footings having been removed. There was a natural compression of the ground below the wall, which might have ended disastrously if the cross-walls and connections had not been contributing to the support. The operation of underpinning is one of those which frequency has rendered careless. It is a common thing to find a considerable removal of wall before the pinning up is commenced; a proceeding which is thought to expedite the work. Nothing can be more dangerous to, nor more reckless of, the lives of those employed in the operation. The very term "underpinning" expresses a piecemeal process, the removal of only a small portion at a time, and the part pinned up in cement and hard materials. A wholesale excavation beneath an old wall is simply taking away its support and hastening its fall. We see besides a variety of operations carried on adjoining a wall of very unstable character, such as digging trenches for foundations and draining, without the slightest care being exercised by shoring the structure. In walls of doubtful composition, or full of old insertions and settlements due to bad foundation, the utmost caution ought to be used, by strutting the wall and inserting "needles" under shaky parts of the structure. On clayey and peaty soils the drainage of water has often a very prejudicial effect, by causing the foundation to yield.

As most of our readers are aware, in common law a neighbor has a right of natural support of the soil; so that if an adjoining owner, by underpinning, causes it to fall he is liable for damages. There is a special easement of support from adjoining land acquired after a certain period of time (twenty years). The case of "Rigby *vs.* Bennett" is instructive as showing the liability of a building-owner to underpin his neighbor's wall before going below it. The plaintiff bought some land in Whitechapel on a building lease, subject to approval of plans. After obtaining consent, he commenced building. An adjoining lot was subsequently purchased by the defendant on like terms, and he proceeded to build an end wall, and commenced to excavate below the plaintiff's foundations, calling upon him to take steps to underpin or otherwise secure his building. The plaintiff refused, and obtained an injunction restraining the defendant from further excavating without underpinning plaintiff's walls. It was arranged that the underpinning should be done so as not to delay time, and the cost of it await the trial. The Vice-Chancellor decided in favor of the plaintiff, and the defendant had to pay cost of underpinning. The defendant appealed against the decision, but the court dismissed the appeal with costs, it being held that the first to build and take up his lease was entitled to support of the adjoining land, and if the defendant wished to go down lower, he must first underpin his neighbor's wall. The same thing would have happened if the wall had been a party-wall, unless the plaintiff derived any benefit from it, in which case he would have had to pay his proportion of the cost.

Walls are sometimes found to overhang from insufficient foundations, and the greatest care is required in underpinning. An important case of this kind was heard some time ago (December, 1878) before the Master of the Rolls ("Duke of Westminster *vs.* Tattershall"). The plaintiff sought to restrain the defendant, who had erected a massive building of great height, from overhanging the plaintiff's land, and claimed damages for the injury. The wall in question abutted close to the plaintiff's land, part of the brick footings and concrete of the wall being within the limit of the same; in fact, the foundations were alleged to be upon the stratum of peat above the London clay, instead of being carried down to it. An irregular subsidence took place; the wall had cracked, and the external wall overhung the plaintiff's land ten inches, so that he could not proceed with his building. On the defendant's side it was contended that the wall would not have further encroached had the plaintiff properly shored up the building after having dug certain trenches. Certain strengthening works were rendered necessary, for which the defendant made a counter claim. Here was a building resting on a bed of peat, which, as it was affected by moisture, caused cracks to appear. How to deal with a building so situated is not an easy matter. It was alleged by one of the witnesses called that the piles driven for the new foundations shook the concrete under the building and caused the cracking. We merely instance the case to show the extreme carefulness necessary in preparing foundations for new buildings next to structures of doubtful stability. After the piles were driven, the earth was excavated and concrete filled in, the piles being wedged up tightly — the only right course that could have been pursued. But excavating trenches near or below walls of shaky condition, especially when the footings rest upon peat, is not a plan that can be defended, nor is underpinning in brick practicable where great weight has to be borne. It has been said by a good authority that it is not possible to underpin ninety tons by bricks, as they would crush. In such an instance, the only substantial means of securing stability is to use Portland cement concrete for the underpinning, and to take every care to secure the wall from cracking or collapsing, by shoring.—*The Building News.*

THE ILLUSTRATIONS.

[*Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.*]

COMPETITIVE DESIGN FOR A SMALL BARN BY "*Mart. Chuzzlewit.*"

IT is intended to erect this barn on a nearly level lot in the suburbs of Providence, R. I.

The earth taken from the manure-pit and trenches will be used to fill in between the walls to raise the floor to the required level, and to form the incline at main entrance. The foundations will be ledge-stone, and the underpinning and chimney will be built of good hard body brick. The threshold, side pieces, and door-guards at main entrance will be granite. The floor of carriage-room will be sidewalk concrete, laid to pitch to carriage-wash, which will have a catch-basin, connected with sewer and covered with a perforated iron cover. The floors of harness-room and stalls will be laid on sleepers bedded in concrete; but the floor over manure-pit will be laid on creosoted spruce joist. The man's room in second story will be lathed, and plastered one coat.

The timber used in framing will be of spruce, except outrigger, which will be of hard-pine. The sides and roof will be boarded with hemlock and shingled with yellow cypress shingles dipped in creosote oil. The outside finish will be of yellow cypress, painted two coats.

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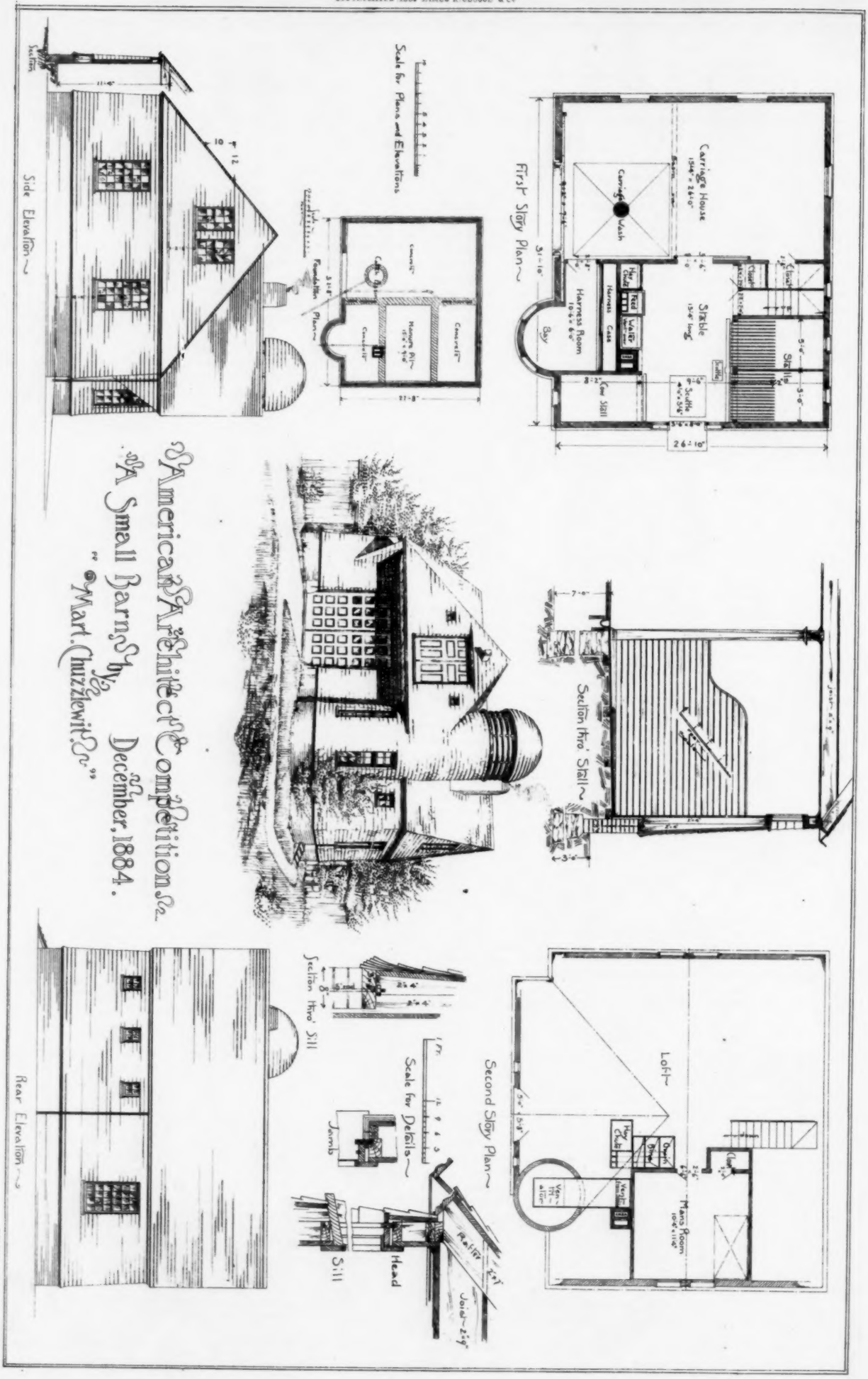
American Architectural Competitions.

A Small Barn, by "Mart. Chuzzlewit, Jr."

December, 1884.



BRIGHTON PRINTING CO. BOSTON

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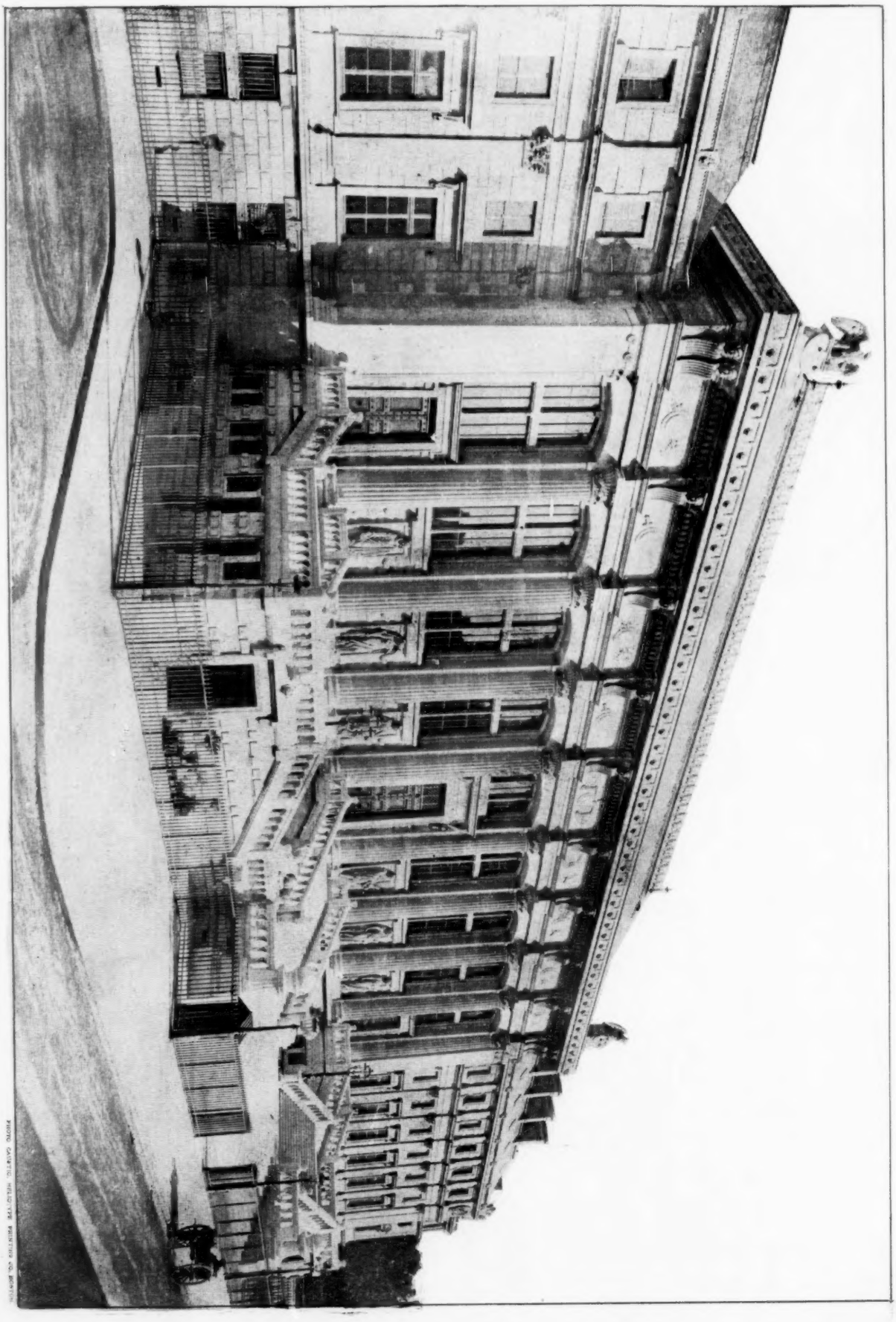

PALAIS DE JUSTICE, PARIS. — L. J. DUC, ARCHITECT.

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STUDY FOR HOSE AT BROOKLINE

HELIOTYPE PRINTING CO. BOSTON

AMERICAN ARCHITECT AND BUILDING NEWS, MAR. 21 1885 No. 432

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Scale for Carved Cornice 3/8 Ft.

Scale for Stair Detail 1/2 Ft.

Scale for Door 1/2 Ft.

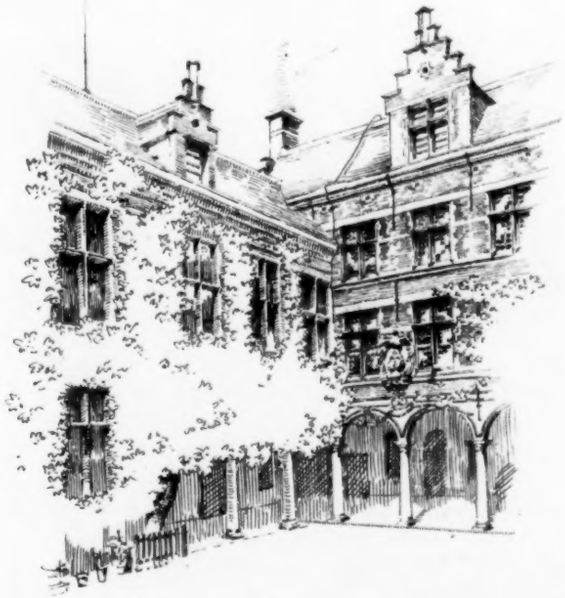
From the Plantin Moretus Mansion Antwerp

Measured and drawn by C H Blackall

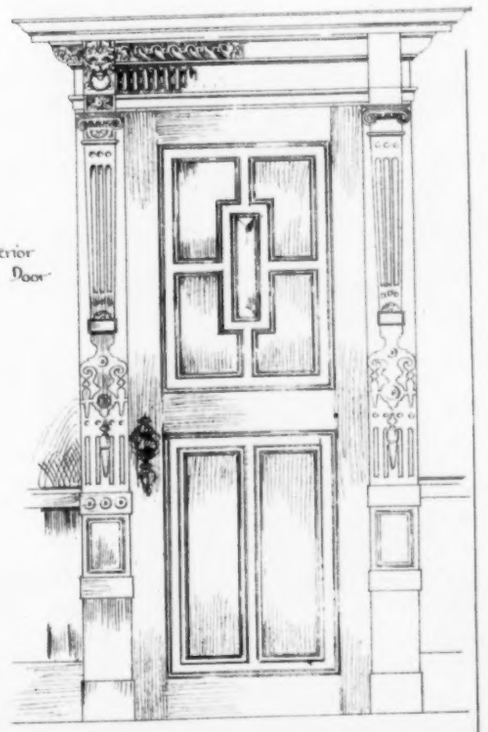
Carved Oak Cornice

Some Antique Door Furniture

Stair Detail - Oak



The Court yard



An Interior Door

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N. 3020. Paris. Saint-Eustache

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The Rear Elevation.

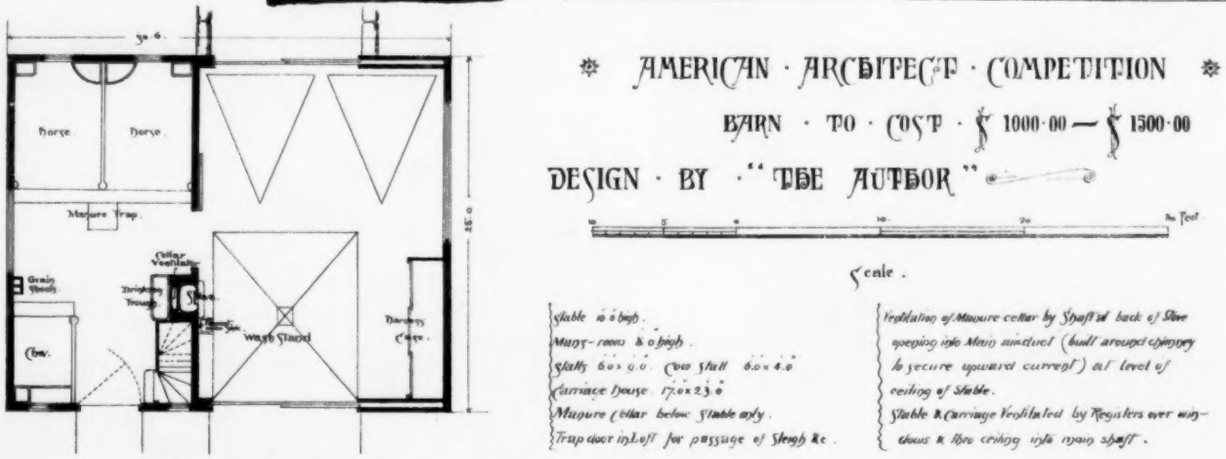
The Perspective View.

One End Elevation.

AMERICAN · ARCHITECT · COMPETITION

BARN · TO · COST · $ 1000·00 — $ 1500·00

DESIGN · BY · "THE AUTHOR"

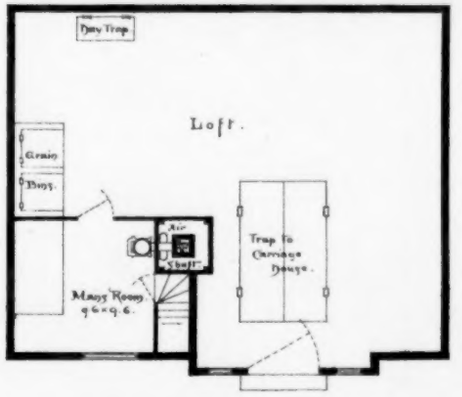


The Stable & Carriage House.

Scale.

Stable is 8 high.
Mans-room 8.0 high.
Stalls 6.0 x 9.0. Cow Stall 6.0 x 4.0
Carriage House 17.0 x 23.0
Manure Cellar below Stable only.
Trap door in Loft for passage of Sleigh &c.

Ventilation of Manure cellar by Shaft'd back of Stove opening into Main and roof (built around chimney to secure upward current) at level of ceiling of Stable.
Stable & Carriage Ventilated by Registers over windows & flue ceiling into main shaft.



The Mans Room & Loft.

HELIOTYPE PRINTING CO. BOSTON

The water from the roof will be taken from the gutters by three galvanized-iron conductors. The under floor in stable and harness-room will be of creosoted spruce. The upper floor over manure-pit will be of creosoted hard-pine plank, that in stalls of oak plank, and in harness-room of best clear spruce. The single floor in second story will be spruce. All the inside finish in first story, and the architraves and base-board in man's room, second story, will be of yellow cypress, in the natural color of the wood. The doors and sash will be of white-pine, painted two coats. The doors in second story will be sale doors; those in the first story will be from detail drawings. The hay-chute will extend up 2′ 6″ above second floor and have door in first story hung with weights and pulleys. The chutes from grain-bins will have two slides at the bottom of each, the space between them holding just one quart. The cap to stall-partition, the mangers, the harness-hooks, the water-trough and the stall-gutters will be of cast-iron. The traps to stall-gutters will empty directly into manure-pit. City water will be brought into the barn from the dwelling.

The stable is ventilated by a box-flue to ventilator, opening in ceiling over water-trough, and closed by a wooden valve that can be operated by cords from stable floor. The manure-pit is ventilated by one of the chimney-flues; the other flue will have a stove-pipe collar in harness-room and in man's room. The closet opening from stable may be used as a water-closet by placing the partition a couple of feet farther back, and the drain will be laid to that point when the barn is built, so that a closet can be connected at some future time. The cow-stall is placed in the stable, so that if the owner does not wish to keep a cow, he can use it for a horse or pony stall. By furring on the outside studding we are enabled to show a comparatively high underpinning, with stone door-guards, on a wooden barn, and at the same time sheath on the inside, while the increased thickness allows us to shingle-in the window and door jambs, which, with the latter, form features of this barn.

PROVIDENCE, R. I., December 18, 1884.

WE will furnish all the material and do all the labor, as shown on plans and described in specifications, for the erection of the barn, submitted by "*Mart. Chuzzlewit*," for the sum of thirteen hundred and fifty-five dollars ($1,355.00). WILLIAM GILBANE & BRO.

Contractor's estimate,	$1,355.00
Architect's fee, 8 per cent,	108.40
Total,	$1,463.40

The contractors were furnished with a full set of specifications upon which to base their estimate.

COMPETITIVE DESIGN FOR A BARN, SUBMITTED BY "*The Author.*"

BY reference to the drawings it will be seen that the two horses are provided with stalls six feet by nine feet, with plenty of free space behind them, while the cow has a stall four feet by six feet, far enough away from the horses to be safe from their heels. The stalls are supposed to drain into the manure-cellar, which extends below the stable only, and has a cemented floor and walls, and an air and water tight stable floor over it, thus securing the full benefit of both solid and liquid manure, while the ventilating-pipe, passing up behind the stove and opening into the main air-shaft at the level of stable ceiling, carries off all offensive gases. The drinking-trough is placed near the stove, so that in winter the water will not be too cold; and in the carriage-house a stand-pipe and faucet are also near the stove, and are thus secured against frost.

The stairs to man's room and loft could open out of carriage-house if desired. The grain-bins are placed in the loft, and chutes are provided to connect with the stable. The carriage-house and stable are both ventilated at the ceiling level by the main air-shaft, which is built around the smoke-flue, and an upward current thus secured in winter. Fresh air may be admitted through the registers in small windows over stalls, or at the sliding-windows to end walls. In the carriage-house is abundance of room for two vehicles in summer-time, while the cutter is stored away in the loft. In winter the carriages may be stored in less space, and ample room found for the cutter in the front portion of the house. A wash-stand and water are provided at the entrance and drained into the house system. A good-sized harness-case is provided in the carriage-house, and upstairs is a roomy loft, with bins, feeding-traps, and trap for passage of cutter or other vehicle to be stored away, while a comfortable man's room is so located that the stove-heat from below may be utilized, or a separate stove connected with the flue.

The construction calls for no special mention, being of the ordinary common frame, sheathed internally with beaded, oiled or painted sheathing, and covered externally with shingles. The roof of ventilator to be covered with tin or copper, as being near the mouth of flue.

I believe the design can be carried out for the sum named in the conditions, in confirmation of which I enclose a *bona fide* bid from a respectable contractor.

JAMAICA PLAIN, STAR LANE.

I will build the stable shown by the drawings by "*The Author*" for the sum of eleven hundred and forty-three dollars.

(Signed) A. A. AYERS.

Bid	$1,143.00
Commission, at 5%	57.15
Total	$1,200.15

The original of this bid may be seen by applying to "*The Author*."

THE PALAIS DE JUSTICE, PARIS, FRANCE. M. L. J. DUC, ARCHITECT.

THE façade of the building here shown is probably the highest achievement of the *Neo-Grec* movement, and is thoroughly well known to all architectural visitors to Paris. It faces the Place Dauphine on the Cité, and is practically the rear entrance to the *corps de batiment* which constitute the Palais de Justice.

THE SOUTH PORCH, ST. EUSTACHE, PARIS, FRANCE.

SEE article on "Paris Churches" elsewhere in this issue.

DESIGN FOR A HOUSE AT BROOKLINE, MASS. MR. W. G. PRESTON, ARCHITECT, BOSTON, MASS.

SKETCHES FROM THE PLANTIN–MORETUS MANSION, ANTWERP, BELGIUM. BY MR. C. H. BLACKALL.

FOR description see article elsewhere in this issue.

COTERMINOUS EXCAVATIONS.

THE construction placed by the Supreme Court of California, in the case of Aston *vs.* Nolan, upon the law relating to the "rights of coterminous owners," leaves the question in such shape, with an "if" added, that hardships have been experienced by very many who have undertaken building improvements since the rendition of the decision, owing to the unwillingness of cavilling parties to submit cheerfully to any law or ruling of courts which does not in very plain terms remove all doubt and question as to meaning, application, and finalities.

This vexatious question has occupied a prominence before the courts, and among owners of property for many years, and large amounts of money have unnecessarily been expended and *wasted* in legal contests, and moneys paid to avoid litigations, because the sections of the code upon which the question hinges are so constructed that it may be swung more ways than one, and whether this way or that, the appearance of consistent reversal seems to remain.

The latest ruling of the present court of last resort reverses the interpretation of the *code* as enunciated by the same tribunal, in the case of Hood *vs.* Zile, which imposed upon those excavating for building purposes, responsibilities which do not exist under the present ruling; and if the decision was free from doubtful meanings, the case would be clear enough for all practical purposes. But the wording — "Each coterminous owner shall be entitled to the lateral support his land receives from the land of the other," is an undefined something that evolves an uncertainty, as far as the *land* is concerned. The decision in reference to sustaining and underpinning buildings in such case, is fairly clear and well defined, except for the mean little "IF" which the learned judge preparing the opinion saw fit to drag into the case, in the following language "*It may be added, IF the building has stood for a period of five years (in this State) before the excavation, the person who erected it has acquired a species of easement in his neighbor's land — a right to the support of his building as well as soil. No such question as this last is presented in the case now before us.*" This interpolation of an outside matter, which did not belong to the case before the court, has worked a hardship, unjustly, because while not in the case, yet made part thereof, furnishing a new groundwork for contests and law-suits, and the basis of refusal to those not willing to assume expenses and responsibilities which should in all justice rest upon them.

However much in harmony with ancient law, and legal logic and theories, the absurdity and unjustness of the "five year" proposition is so manifest that it is not to be wondered at that people generally express surprise that such a doctrine should find recognition at the hands of an intelligent tribunal in the year 1884; particularly in the case named, as its recognition in a certain sense nullifies the force and contradicts the decision in its main issue; and further, the "five year" doctrine is discriminating and unfair, in this: it protects the owners of old, dilapidated, and rickety structures from the costs and expenses which the same rule of law imposes upon parties who happen to own structures not more than five years old, thus affording protection to a certain class of buildings, hundreds of which in San Francisco are a disgrace to the neighborhoods where located, while better, more valuable, better tax-paying property is excluded from an equal right to protection. The injustice in such cases is often aggravated by the fact that the cost and expense to the progressive man making new improvements, of holding up and underpinning some of the *more than five year old* structures, amounts to more than the whole concern would bring, exclusive of the land if offered at private or public sale. — *California Architect.*

OVERLOADED MASONRY OF COMPOSITE WALLS.

THERE is a risk in building too high when the material employed is of a yielding or crushable nature. It is not only on the foundation that a heavy building presses; the lower courses of the masonry are subjected to considerable pressure, especially when the weight is concentrated on a few points of support, such as piers. We can imagine a solid wall carried to such a height that the weight of the superstructure will press severely upon the lower courses, and even cause crushing to take place. Cases are rare in which actual crushing takes place, though we occasionally hear of lofty chimneys and party-walls yielding from this cause. In a wall every additional inch in thickness increases the area of the pressure, and thereby adds to the security of the wall. So long as there is a well-distributed pressure upon the stone or brick, there is not much chance of crushing in the case of ordinarily thick walls which are of good materials, as the thickness necessary for stability against overturning gives a sufficient area of base. Every extra ten feet or so of rise requires a proportionate thickness of wall, and this law enables the weight to be more uniformly distributed. But in the case of angle-quoins and isolated piers of buildings there is a limit, and we have therefore greater to fear from additional height.

These remarks are suggested from the report, in an American contemporary, of slight movements having taken place in the City Building at Philadelphia, due to the imposition of the great weight of the tower upon the lower masonry. This tower, it is said, will be the highest structure in the world next to the Washington Monument. Its weight is enormous. The architect, Mr. McArthur, it is said, has carefully calculated the piers and foundation, and the strain upon them is stated to nowhere exceed nine tons to the square foot. Yet, notwithstanding this limitation, there has been a settlement of the more heavily-laden portion, which has cracked and broken the polished and sculptured stone in the interior. This has been attributed to the filling of the joints above and below the sculptured stones out to the face of the work. By a very natural and usual subsidence or settling of the brick backing, the pressure was thrown on the facing stones, and the mortar hardening first on the outer edges caused them to become "flushed" or chipped. We have here a most riskful mode of building lofty structures. The same incoherent kind of construction led to the fall of the Bradford chimney some time ago, and to that of Chichester spire. There were in the first an outer and inner casing, and a rubble core in the centre. In these cases the whole weight is often transferred to the outer facework, which must speedily yield. The transference of the weight is often made before the building is completed, for the inner core or rubble-work, being largely composed of mortar joints, settles as the work rises, until the chief weight is borne by the outer facings. All those acquainted with building know the dangers resulting from compound walls of every kind. Inequality of settlement is the result, causing cracks and throwing weight on certain points. Unless the joints of the backing of the wall be equal in number and thickness to those on the facework, unequal settlement must take place unless the joints be in cement. Walls with ashlar stone facing, with rubble behind, and of brick ashlar, are equally liable to the danger of irregular pressure; the former have been known to collapse, or the facing to bulge, by hydrostatic pressure, or under a severe fire to crack and fall; and the latter, composed of a brick facing of superior quality with thin joints bonded with headers at certain heights are apt to separate from the backing. We question very much whether it is safe to build high walls and lofty structures under any circumstances with materials so arranged, and the failures we have recorded from time to time show that it is never prudent to build to any great height with a rubble or brick core and facings. The very nature of a composite wall with a centre and two outer sections is for the middle and weightier section to sink and drag down the outer sections, or to jeopardize one or both facings by throwing the whole weight upon them. The principle is one of internal disruption, for it is impossible to insure to the three sections the same degree of settlement. Even when through bonders are introduced, they get broken off by the settlement of the backing.

There is a further cause of failure in walls of great height. The weight is often thrown or concentrated on one edge. Nor can the architect avoid such a distribution of weight. A massive cornice or dressings on the outer side will be sufficient to cause an overhanging of the wall on that side. The thrust of roofs and arches internally may produce the same effect, and, therefore, what has been calculated as a safe margin of pressure may be entirely frustrated. So long as the weight is evenly distributed through the whole thickness of the wall there is ample resistance to prevent crushing, but directly we consider the effect of the weight being transferred to an outer edge, perhaps a mere line of the surface, all ordinary calculation is rendered useless. Further than this, as we have said at the onset, we must take into account the limitations of isolated piers, and a concentration of pressure brought upon their outer edge. Calculations of pressure based upon a unit of nine tons per square foot, or even double that amount would scarcely be sufficient under such conditions.

And then, what are the crushing limits of stone and brick? One authority states that the breaking strain in compressions for sandstone is two-and-one-half tons per square inch, and for stock bricks .90; but such figures are excessively high when it is known that brickwork set in cement has been fractured at 36 tons per square foot. The highest resistance for brickwork has been found to be 621 pounds per square inch. We know, practically, that Portland stone is capable of supporting great weights; the piers carrying the dome of St. Paul's show 17.705 tons per square foot, and according to the experiments made on the brown bed, the ultimate resistance of the stone is 1.68 tons per square inch. Reverting to a more practical question, the fractured stones at the Philadelphia building, architects may learn from this instance the importance of specifying in the case of heavy structures that the outer joints should be laid "slack," so that when the pressure comes upon the outer edges the stone will not "flush." The interposition of sheets of lead, wood, or even felt in the joints of piers are sufficient to prevent the distressing appearance of broken string-courses over a row of windows, such as we hear has taken place owing to want of the precaution in leaving joints open above the windows. What would have been the consequence to many of our beautiful towers and steeples if they had been built with rubble or soft cores we should hardly like to predict. Few of our majestic towers crowned with spires would have resisted the forces of so many centuries if they had been built in the manner prescribed in some modern specifications. Their massive buttresses have been helpful in resisting the oversetting force due to the wind, and in enlarging the area of base. The power of stones to resist crushing is limited. We cannot expect some of our limestones to endure for ages unimpaired by the pressure brought upon them. Disintegration goes on day by day, the particles become less coherent or dissolve away by the acids in the atmosphere, and the working margin of safety is reduced little by little. — *Building News.*

SUN-KINKS.

IN a recent journal of this city an article descriptive of a railroad accident appeared under the heading, "Derailed by a Sun-Kink." The title doubtless puzzled many readers. The term indicates that the rails were thrown out of line by expansion, due to the heat of the sun. Few accidents are attributed to this cause, though it may be responsible for more than are supposed. It will be interesting to determine a few maxima of distortion that can be thus produced.

The expansion of metals under the influence of heat is very slight. A mile of iron rails, for an elevation of temperature of 100° Fahrenheit, only expands two feet eight and one-half inches. This is so little as to be readily taken up by the one hundred and seventy-six joints that exist in that length of rails. If the rails were laid in very cold weather, in solid contact with each other, then, on a warm, sunny day, a considerable disalignment could be produced. To find the maximum for the mile of rails, we must suppose that the line breaks in the middle, and bulges out like a flattened letter V. In this condition of things, the broken line of rail, with the original line for base, would form an equilateral triangle. The altitude of the triangle may be calculated by the familiar rule of the reverse of the hypotenuse. It will be found equal to nearly ninety feet. The result, though deduced by the simplest of calculations, is an astonishing one. It is enough to account for any number of "sun-kinks." The books are very prolific of instances of expansion by heat, and always speak of the expansion of rails. They do not, however, allude to the geometrical element of danger; they concern themselves only with the physical one.

It is obvious that a mile of rails would never expand in this way. Disturbances of alignment would be confined to smaller sections. The calculation shows a maximum that would never be attained. The conditions might be fulfilled by four rails. For the given elevation of temperature they would expand about eight tenths of an inch, with a lateral displacement of over two feet. For an expansion through 50° Fahrenheit, the displacement would be eighteen inches.

Two rails would act in accordance with the supposition most readily. Their total expansion, for 100° Fahrenheit, is four-tenths of an inch, and the bulge due to such expansion would be twelve inches. For half the number of degrees it would be nine inches. This shows

how very small a rise of temperature might produce a spreading sufficient to throw a train from the track. The smaller figures are as impressive as the ninety feet, when it is recollected that four inches displacement of the rails might produce a catastrophe.

The distortion might be confined to a single rail; and, from what has been said, it is clear how seriously the small fraction of an inch of expansion could affect it. It is an application of the old law of the elbow-joint press reversed, the working pressure taking the place of the resistance. The work is done at a great disadvantage, but the power is almost limitless.

A very good instance of "sun-kink" could be seen some years ago on the wooden bridge leading from the elevated railroad station at One Hundred and Fifty-Fifth Street, in this city, toward Ninth Avenue. A gas-pipe of wrought-iron was laid on the floor of the structure. As if to render it more susceptible to the rays of the sun, it was painted of dark color. On cold or cloudy days it lay in its normal position. On sunny days, the writer has frequently seen it bowed outward nearly or quite a foot out of line. The surface of the foot planks under this part of it became worn by the daily friction. Finally, an arrangement of bends was introduced that operated as an expansion-joint, and now no bowing takes place.

Even 50° Fahrenheit, seems a large rise in temperature. But it must be remembered that the temperature of rails, or similar objects, is affected by the radiant heat of the sun as well as by the atmospheric temperature. The latter is only the initial factor. The sun's rays could easily raise their absolute temperature above 100° Fahrenheit.—*T. O'Conor Sloane, Ph. D., in the Popular Science Monthly.*

AN OLDEN INCOHERENT EXHIBITION.

The Belfry, Hotel-de-Ville, Valenciennes, France. designed by M. Dupont.

THE exhibitions of "Incoherent Art," which have been lately introduced in Paris are not original, says *The Architect*, although they are supposed to be a special product of French wit. As far back as 1762, that is, seven years before the opening of the Royal Academy, an exhibition of the kind was held in Bow Street, Covent Garden. It was organized by Bonnel Thornton, who was the leading spirit of the *Connoisseur*. He was aided by William Hogarth. In 1762 the Society for the Encouragement of Arts, Manufactures, etc., and the Society of Artists, proposed to hold exhibitions, and for fun Thornton got up a third, which was declared to be under the auspices of the Society of Sign-Painters. It was announced that it was to contain "a most magnificent collection of portraits, landscapes, fancy pieces, flower pieces, night pieces, Scripture pieces, etc., designed by the ablest masters, and executed by the best hands in the kingdom." It was also declared in the gravest manner that the worshipful sign-painters were not prompted by any mean jealousy of the members of the other societies, for, "animated by the same public spirit, their sole view is to convince foreigners, as well as their own blinded countrymen, that however inferior this nation may be unjustly deemed in other branches of the polite arts, the palm for sign-painting must be universally ceded to us, the Dutch themselves not excepted." The strange sight that was presented to the visitors may be imagined from the description in the *London Register* of that time: —

"On entering, you pass through a large parlor and paved yard, of which, as they contain nothing but old common signs, we shall take no further notice than what is said of them in the catalogue, which the reader will not find to be barren of wit and humor. On entering the grand room, you find yourself in a large and commodious apartment, hung round with green baize, on which this curious collection of wooden originals is fixed flat, and from whence hang keys, bells, swords, poles, sugar-loaves, tobacco-rolls, candles, and other ornamental figures, carved in wood, which commonly dangled from the pent-houses of the different shops in our streets. On the chimney-board (to imitate the style of the catalogue) is a large blazing fire, painted in water-colors; and within a kind of cupola, or rather dome which lets the light into the room, is written in golden capitals, upon a blue ground, a motto disposed in the form following: —

SPECTATUM
ADMISSI
RISUM
TENEATIS

"From this short description of the grand room (when we consider the singular nature of the paintings themselves, and the peculiarity of the other decorations), it may be easily imagined that no connoisseur who has made the tour of Europe ever entered a picture gallery that struck his eye more forcibly at first sight, or provoked his attention with more extraordinary appearance."

The pictures were remarkable. Thus, for example, "The Irish Arms," by Mr. O'Blaney, represented a pair of extremely thick legs in white stockings and black garters; "A Man" was a view of nine tailors at work; "Nobody alias Somebody — a Character," was an officer all head, arms, legs, and thighs. But, according to the *Register*, "the cream of the whole jest is No. 49 and No. 50, its companion, hanging on each side of the chimney. These two are by an unknown hand, the exhibition having been favored with them from an unknown quarter. Ladies and gentlemen are requested not to finger them, as they are concealed by blue curtains to preserve them. Behind the curtains are two boards, on one of which is written 'Ha! ha! ha!' and on the other 'He! he! he!' At the opening of the exhibition, the ladies had infinite curiosity to know what was behind the curtains, but were afraid to gratify it. This covered laugh is no bad satire on the indecent pictures in some collections, hung up in the same manner with curtains over them." An opportunity was offered to amateurs to display their skill in identifying the works, and it was stated that "a remarkable *cognoscente*, who has attended at the society's great room with his eyeglass for several mornings, has already piqued himself on discovering the famous painter of the 'The Rising Sun' (a modern Claude) in an elegant night piece of the 'Man in the Moon.'" The *St. James's Chronicle* of that day could not see any humor in the exhibition, and the charge of a shilling was said to be a swindle; and, after a condemnation of the affair, wound up by saying: — "In fine, this exhibition is a most scandalous abuse and bubble. The best entertainment it can afford is that of standing in the street and observing with how much shame in their faces the people come out of the house."

POLLUTION OF STORAGE RESERVOIRS.

WASHINGTON, D. C., March 10, 1885.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — The discussion of this subject in your issue of March 7 leads me to offer a note as a contribution to the study of its cause.

More than twenty years ago this disease attacked the water of the Washington Aqueduct. About the same time Boston's Cochituate, New York's Croton, and Cincinnati, which takes its supply from the great and ever-flowing Ohio River, suffered in precisely the same way. It has appeared several times in the Washington water, and these several times, in two or three seasons, it has been as offensive in the clear and rapidly-flowing Potomac as in the reservoirs. It is not, therefore, a disease of impounded water alone. With a large glass jar to collect samples for analysis, I, when it first attacked our receiving reservoir, launched a boat on its surface. The water was covered with a very thin but visible green film. The boat's wake was light. Wherever the oars dipped, the clear, bright water appeared through the broken film. I skimmed enough to fill a gallon jar with, half green stuff, the other half water. It was offensive in taste and odor. Examined with microscopes it was found to consist of the cells which seem to constitute the lower orders of vegetable life, some of which are difficult to distinguish from living creatures. I opened the wastes and drew off three or four feet of water. A violent squall and heavy summer rain supervened. The next morning the shores left by the lowering of the water were covered with a blackish-green coating; for when drying and exposed to the air and sun, these atoms turn black and adhere to each other in a sort of tough tissue. The water was clear and good again. This same process has been repeatedly witnessed since. A violent rain-squall with its attendant wind breaks up the film, which seems to blow ashore and there perish. A few years since, after several days' discussion in the newspapers, a delegation of our city authorities went up the river to endeavor to find the source of the mischief. Green scum covered river and reservoir, and made the journey to Seneca disagreeable. A violent rain-squall met the party, and they returned to Washington to report that all traces of the disease had disappeared with the storm. This vegetable growth is too extensive under favorable conditions of temperature and weather to be controlled by artificial means. It comes, — we may be thankful, — not every season; but when it does come it runs its appointed course like small-pox, but there is no recorded case of death or even of sickness being attributed to it. It is disagreeable, but not poisonous.

M. C. MEIGS.

A LABOR COMMISSION'S REPORT ON THE CITY OF PULLMAN.

NEW YORK CITY, March 9, 1885.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — Will you tell me where I can get the report referred to in the last *American Architect* concerning the city of Pullman? and you will oblige, Yours, etc., F. A. WRIGHT.

[WRITE to Mr. Henry Luskey, Secretary of the Commission, Ohio Bureau of Labor Statistics, Columbus, Ohio. — EDS. AMERICAN ARCHITECT.]

NOTES AND CLIPPINGS.

Discoveries in Rome. — I have not yet seen that you have received news of a late very important archæological discovery in Rome. On some property near Porta Salara, sold by Prince Bonaparte to an Italian company, there have been found, at a depth of about nine feet, the graves of four very distinguished historical personages, three of whom were members of the patrician family of Sixinius Crassus. The graves are those of Cneius Pompeius, nephew of the great Pompeius Magnus, "Pontifex," Prefect of Rome, and Questor, who was murdered by order of the Emperor Claudius; his brothers, Marcus Sicinius Crassus, murdered by order of Nero, and Piso Sicinianus, Quindecemvir, and four-days' Cæsar, adopted by the Emperor Galba, and murdered by order of the Emperor Otho; and of Verania Germina, daughter of the Consul Quintus Veranius. It has aroused the astonishment of the Roman archæologists that the epitaph on the tomb of Cneius Pompeius Magnus expressly mentions the Emperor Claudius as his murderer. —*Naples letter to the London Standard.*

A Really Wonderful Clock. — Probably the most wonderful timepiece ever heard of is a clock described by a Hindoo Rajah as belonging to a native princess of Upper India. In front of the clock's disk was a gong, swung upon poles, and near it was a pile of artificial limbs. The pile was made up of the full number of parts for twelve perfect bodies, but all lay heaped together in seeming confusion. Whenever the hands of the clock indicated the hour of 1, out from the pile crawled just the number of parts to form the frame of one man, part joining itself to part with a quick metallic click, and when completed the figure sprang up, seized a small mallet, and walking up to the gong struck one — the first hour. When 2 o'clock came two men rose up and did likewise; and so through all the hours of the day, the number of figures being the same as the number of the hour, till at noon and midnight the entire heap sprang up, and marching to the gong, struck one after another each his blow, making twelve in all, and then fell to pieces again. —*Chicago Tribune.*

Petroleum as Fuel. — Petroleum is to all appearance destined to effect changes in commerce and industry, second only to those wrought by steam itself. Petroleum waste is already being extensively used for fuel on Russian railways; the steamships on the Caspian use nothing else. It is said that crude petroleum, after a few day's exposure to the air, may be used for the same purpose with perfect safety, and petroleum fuel can be delivered at Batum at twenty-six shillings a ton. If the scheme for running pipes from Baku to Batum be carried out, it can be laid down for very much less. But weight for weight, petroleum goes nearly three times as far as coal, and coal being worth at Batum from £2 to £3 a ton, it follows that 26*s.* worth of the liquid is equal to from £4 to £9 worth of the solid fuel. The extinction of our coal trade with Russia has become a question of a few months. Nor is this all. Petroleum goes into far less bulk than solid fuel, and can be handled at far less cost. If it could be used by ocean-going steamers for long voyages, the gain would be enormous. By storing the oil in the ballast tanks, the space now occupied by coal could be utilized for cargo; and as the fires are fed automatically — the petroleum being pulverized by a jet of superheated steam — the cost of stoking would be reduced to almost nothing. And this is no mere dream, but a present reality. "So simple is the fuel to use, and so reliable is the action of the pulverizer," writes Mr. Marvin, "that the English and Russian engineers, running the steamers from Baku to the mouth of the Volga, told me that, having turned on and adjusted the flame at starting, they concern themselves no more about the fires until they reach their destination in a couple of days' time." Petroleum is, moreover, clean to use, and makes no smoke. Another and highly valuable peculiarity of petroleum is its existence in places remote from coal-measures, and where coal for steam or any other purpose is simply unattainable. There are large deposits of it in Beluchistan, the Punjab, and probably in other parts of India. It ought also to be found in the West Indies, in the Soufrière District of St. Vincent, the pitch-lake region of Trinidad, and on the Northern coast of Venezuela. Enterprising capitalists in want of outlets for their money could not well embark in a more promising adventure than a quest for petroleum springs. The new fuel is not likely to supersede coal in England; but the struggle for existence and the lowness of freights may compel its adoption by all steamers which make long voyages. The resulting economy in our rapidly lessening coal-measures, though it might not be viewed with satisfaction by the owners of collieries, would be an advantage to the community, and indefinitely postpone that dearth of fuel with which our industrial supremacy has so long been threatened. — *London Spectator.*

How Petroleum is quarried in Alsace, Germany. — A correspondent of the Pittsburgh *Dispatch*, writing from Strasburg, Germany, gives the following interesting account of the primitive manner of mining petroleum from the mines of Alsace: —

Possibly it is not generally known in America — certainly it was not to me before I visited this province — that oil was obtained from the earth here a century before it was dreamed of in Pennsylvania. Such, however, is the case. Oil wells have been worked here for about 150 years, and the industry employs a small army of workmen and represents much capital. It is chiefly centred near the town of Sulz, near the battle-field of Woerth, and just south of the Bavarian frontier. The oil-producing region extends over several square miles of territory, and is entirely comprised within the private estates of the Lebel family, who have owned it for centuries, and who were the discoverers of the oil. It is a close corporation, this Lebel family — so close that no visitors are allowed upon the grounds, and other extraordinary precautions are taken to keep secret the mode and manner of extracting the oil. The rule against visitors is now and then broken, however, in favor of the owners' personal friends, and many facts concerning the establishment leak out from the workmen employed there. This Alsatian oil is not called petroleum, I believe, although it most emphatically is rock oil. For it is found in a vast layer of sandstone, which it completely saturates. But it does not flow, and it cannot be pumped, and the people here do not know anything about "torpedoing." So they dig down to it and quarry it out in chunks — the stone and oil together — so that the oil wells are really mines, worked very much like coal mines. This was the original method, practised a century and a half ago, and it has never been improved upon, except that steam-power is now used instead of hand-power to hoist the stone from the mine — no small task when it is remembered that the oil-bearing vein of rock is 300 or 400 feet below the surface. The original vein was found close to the surface, cropping out, indeed, but it was small and was soon exhausted. The vein now being worked is apparently inexhaustible. At the opening of each shaft a large factory is built, with steam engines and a chimney stack 100 feet high. This is built before the shaft is sunk. Then the men begin to dig, lining the hole with strong timberwork as they go down. The shaft is generally about 2 yards by 4 or 5 yards in size. At a certain depth various "drifts" are dug for purposes of ventilation, and the system of ventilation is said to be very perfect. When the oil-bearing rock is reached, galleries and headings are cut through it, just as in a coal mine or a silver-ore mine. The stone is conveyed in carts to the foot of the shaft and then hoisted up in big buckets. The method of extracting the oil from the stone is a primitive one, also. It is simply put in kettles over a fire and boiled out — almost like trying out lard. The result is a pretty good quality of oil for lubricating purposes, for which it is used exclusively. No attempt at refining it sufficiently to apply to illuminating purposes has ever, I am told, been made. It is different from American oil in many respects. It has not the smell of Pennsylvania petroleum, nor does it evolve gas. If it did, it never could be mined out as it is So free is it from odor and gas, indeed, that the air in the mines is said to be singularly pure and pleasant. No workman has ever been suffocated by foul gases, nor has there ever been an explosion. A good mine produces about 5 tons of the boiled out oil per day. They sell it entirely by weight here. The price is equal to about $9 a barrel in American measurement. The 5 tons are equal to about 50 barrels, so that a well produces, say, $450 per day. To do this it is worked day and night by three gangs of men, each gang working eight hours. The net profit to the proprietors is large, because beggarly wages are paid to the men. The highest wages paid is 55 cents a day, and many of the men get only 40 cents, or even less — so the cost of running the mine is very small. Its original cost, however, is considerable. I am told that it takes a force of 17 men more than six months to sink a shaft and get it ready to operate, and the cost is well on toward $15,000. As I have said, no flowing oil is met with, nor any gas. But several shafts have been rendered useless by being flooded from veins of water — salt water. The Alsatians never yet have heard of such a thing as pumping out a mine, and the water flows in faster than they can hoist it out with buckets. So when a mine is once flooded they give it up as a bad job and sink another.

An Underground Electric Railway.—For about two years past, says the *Electrical World*, there has been in successful operation in the Zankerode Colliery, at Plauen, Germany, an underground electric railway, which carries its cars loaded with coal over a level road some seven hundred feet in length, making twenty-five trips per day, and speeding at the rate of seven miles an hour. Its daily carriage amounts to about two hundred tons. The entire plant has cost nearly $4,500 There has been no outlay for repairs, and the wages of two employés constitute almost the total expense, so it is an economic as well as a mechanical success. The details of operation we gather from the account of a visitor to the mine. There is above ground at the colliery a dynamo which is driven by belting from a small vertical engine placed with the cylinders inverted, the pulleys being about three to one. The dynamo and engine are run at respectively six hundred and two hundred revolutions per minute. The shaft of the pit is 720 feet deep, and down it, by one-fourth inch copper wire, is transmitted the electricity, and in the road it is led along two rails like a T-iron secured to the roof of the mine. The road has a double line of rails in it, and is arched with brick throughout its length, the conductors being fastened to porcelain insulators fixed in the masonry. On the locomotive, and connected by gearing to its wheels, is a dynamo, each of whose poles communicates with one of the conductors on the roof by means of a covered wire, one end of which is fastened to a carriage running on the rail, and the other to a pole of the dynamo. When the dynamo on the surface is driven, the current passes down the shaft by one of the wires and along the conductor, until it reaches the carriage; then down the wire to the pole of the dynamo on the locomotive, and in passing through the dynamo to get to the other pole, and thence to the return, causes the armature to revolve, and the motion is communicated by gearing to the wheels of the locomotive. The proportion of useful effect in the arrangement is thus given: steam engine, ten horse-power; dynamo, five horse-power; locomotive, three horse-power — demonstrating that thirty per cent of the power of the steam-engine is got out of the locomotive. The whole affair is simple, compact and effective, and the results are perfectly satisfactory to the owners.

Michigan's Lumber Product. — The lumber returns for the State of Michigan for 1884 show the following figures: Saginaw Valley, 1,004,997,853 feet; Lake Huron shore from Tawas to Cheboygan, 495,937,079 feet; Manistee River and tributaries, 639,952,568 feet; other points on the western side of the State, 399,793,037 feet; mills on various railroad lines, 789,032,775 feet; making a total in the lower peninsula of 3,567,235,987 feet; the total cut in the upper peninsula was 608,163,229 feet, making a grand total for the State of 4,175,339,216 feet. The total shingle product for the lower peninsula was 2,724,577,300 shingles; upper peninsula, 121,323,750 shingles, making a total for the State of 2,845,841,050 shingles, of which Saginaw, Manistee, and Muskegon Rivers produced one-half. The amount of lumber reported on hand in the lower peninsula at the close of the year 1884 was 1,419,161,355 feet; in the upper peninsula, 120,913,665 feet, making a grand total of 1,540,075,020 feet. —*New York Times.*

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

[*Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.*]

BUILDING PATENTS.

[*Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.*]

313,041. WINDOW-SHADE ATTACHMENT. — Nelson F. Acers, Iola, Kans.

313,065. HOT-AIR FURNACE.—Benjamin W. Felton, Boston, Mass.

313,068. DISCHARGE AND WASTE-PIPE PROTECTOR.—Wellesley W. Gage, Yonkers, N. Y.

313,071. SMOKE-CONSUMING FURNACE. — Franklin B. Giesler, Milwaukee, Wis.

313,085. STAY-ROLLER FOR SLIDING-DOORS.—John H. Lawrence, Sterling, Ill.

313,098. LOCK.—Benjamin Moser, Brooklyn, N. Y.

313,099. GLASS MOSAIC FOR DECORATING ROOMS AND OTHER PURPOSES.—Rudolph Nielson, New York, N. Y.

313,138. WINDOW.—Emil Wagner, Cincinnati, O.

313,193-194. DEVICE FOR LOCKING JOINTS. — Edward L. Gaylord, Bridgeport, Conn.

313,195. PLANE FOR PICTURE-MOULDINGS. — Edward L. Gaylord, Bridgeport, Conn.

313,203. MACHINERY FOR MANUFACTURING PORTLAND CEMENT.—David Griffiths, Egypt, Pa.

313,210. SELF-CLOSING HATCHWAY. — Thomas H. Hulbert, Minneapolis, Minn.

313,217. MANUFACTURE OF PORTLAND CEMENT.—Robert W. Lesley, Philadelphia, Pa.

313,221. COMPOSITE TILING, PAVING AND FLOORING SLAB OR BUILDING-BLOCK.—Robt. Marsh, Brooklyn, N. Y.

313,228. FASTENING FOR METAL LATHS. — Aaron B. Moore, Mount Vernon, O.

313,239. DRAUGHTSMAN'S INK-MIXER. — William W. Redfield, Minneapolis, Minn.

313,240. ELEVATOR-CAGE AND SAFETY-ATTACHMENT.—Geo. H. Reynolds, New York, N. Y.

313,241. ELEVATOR.—Geo. H. Reynolds, New York, N. Y.

313,249. FAUCET.—Nicholas Styne, Brooklyn, N. Y.

313,258. FASTENING FOR MEETING-RAILS OF SASHES.—George Thumshirn, Branford, Conn.

313,261. SHUTTER-FASTENER. — Avery Van Wie, Indianapolis, Ind.

313,275. DIVIDERS AND CALIPERS.—Charles S. Barber, Hartford, Conn.

313,281. WATER-CLOSET. — August F. Blesch, Columbus, O.

313,314. VALVE FOR WATER-CLOSETS AND OTHER RECEPTACLES. — William H. Gants, San Francisco, Cal.

313,328. BOLT FOR DOORS OR SHUTTERS. — Annie W. Harris, Philadelphia, Pa.

313,371. ALARM DOOR-FASTENING. — Marion M. Roberts, Norris City, Ill.

313,375. CHIMNEY CAP AND VENTILATOR. — Konrad Reutschi, Battle Creek, Io.

313,376. METAL ROOF.—L. Lewis Sagendorph, Cincinnati, O.

313,412. WATER-PROOF COMPOUND. — John T. Elliott, Grand Rapids, Mich.

313,423. AUTOMATIC FIRE-EXTINGUISHER.— Chas. L. Horace, Brooklyn, N. Y.

313,439. LOCK.—Benjamin Moser, Brooklyn, N. Y.

313,441. FIREPLACE AND CHIMNEY.—Theodore C. Nativel, Oakland, Cal.

313,446. STEAM-HEATING APPARATUS. — Stephen H. Purdy, St. Paul, Minn.

313,450-451. AUTOMATIC HATCHWAY-GUARD FOR ELEVATORS.—Columbus K. Rogers, Salem, Mass.

313,457. LOCK-HINGE. — Samuel Tuerk, Chicago, Ill.

313,464. DOOR-OPENER. — Edward G. Worley, New York, N. Y.

313,465. SUSPENDED SCAFFOLD. — John Worsley, Chester Pa.

SUMMARY OF THE WEEK.

Baltimore.

FACTORY. — George Archer, architect, has prepared drawings for the Estate of Thos. Wilson, for a one and three st'y frame factory, 75′ x 150′, to be built at Canton, for the Poppleir Silicated Phosphate Company; John Haswell, builder.

DWELLING. — Wm. H. Marriott, architect, is building a two-st'y and attic frame dwell., 36′ x 42′, on Charles-street Ave., to cost $4,500.

BUILDING PERMITS. — Since our last report thirty-four permits have been granted, the more important of which are the following: —

Wm. H. Fowler, 4 three-st'y brick buildings, s s John St., between Bond and Broadway.

C. A. Pindell, 4 three-st'y brick buildings, w s Argyle Ave., n of Lanvale St., and 4 two-st'y brick buildings, e s Shields Alley, in rear.

Samuel B. Derr, 3 three-st'y brick buildings, commencing n e cor. Linden Ave. and Robert St., and 4 three-st'y brick buildings, n s Robert St., in rear of above.

C. Franke, three-st'y brick building, e s Gay St., between Caroline and Dallas Sts.

L. F. Bowen, 12 two-st'y brick buildings, e s Carter Alley, between Lanvale and Townsend Sts.

H. P. McGrath & Co., three-st'y brick warehouse, on right of way.

D. C. Howell, 9 three-st'y brick buildings, e s Foster Alley, s of Lanvale St.

Longmain, Straine & Co., 12 two-st'y brick buildings, e s Washington St., commencing s e cor. Federal St.

John Keeper, 2 three-st'y brick buildings, n e cor. Hollins and Stricker Sts., and 4 three-st'y brick buildings, e s Stricker St., n of Hollins St.

W. F. Stubbs, 19 two-st'y brick buildings, n e s Cross St., between St. Peters Street and Columbia Ave.

Jas. Connaughton, three-st'y brick building, e s Jasper St., n of Franklin St.

J. Vancollen, three-st'y brick building, e s Gay St., between Chew and Caroline Sts.

W. E. Wood & Co., 12 two-st'y brick buildings, e s Sassafras St., s of Cross St.

Walter W. Watts, 44 two-st'y brick buildings, w s Garrett Ave. and n and s of Clement St.

A. A. White, three-st'y brick building, w s North St., s of Townsend, and stable in rear.

Jacob Saum, 8 three-st'y brick buildings, s s North Ave., between Eutaw Pl. and Linden Ave.

Peter Flaherty, etc., 3 two-st'y brick buildings, w s Duncan Alley, between Fayette and Orleans Sts.

F. E. Yewell, 32 two-st'y brick buildings, s s Washington Road, between Bayard and Bush Sts., 24 two-st'y brick buildings, n s Ward St., between same, and 7 two-st'y brick buildings, w s Bayard St.

Boston.

BUILDING PERMITS.—*Brick.—Chapman Pl.*, cor. Bosworth St., dwell. and store, 8′ x 50′; A. C. Russell, owner; John Mack, builder.

Adams St., cor. Dorchester Ave., halls and offices, 40′ x 75′; Henry Fields, owner; McNeil Brothers, builders.

North Centre St., No. 12, mechanical-building, 34′ x 98′; C. M. Hurd, owner; A. Hataway, builder.

Brooklyn.

BUILDING PERMITS. — *Schenck St.*, w s, 109′ 9″ s De Kalb Ave., 10 four-st'y brown-stone flats, tin roofs; cost, each, about $12,000; owner, Thos. H. Brush, Fourth Ave., cor. Flatbush Ave.; architect, F. E. Lockwood.

York St., s s, 25′ w Charles St., three-st'y and cellar brick store and tenement, tin roof; cost, $4,500; owner and architect, John Witte, 186 York St.; builders, John Kolle and Jno. Stabler.

Monroe St., n s, 250′ w Sumner Ave., 5 two-st'y brick dwells., tin roofs; cost, each, $4,800; owner, architect and builder, Daniel B. Norris, 359 Clifton Place.

Evergreen Ave., w s, 60′ s Montieth St., three-st'y brick ice-house; gravel roof; cost, $12,000; owners, S. Liebmann's Sons, Forrest St., near Bremen St.; architect, Th. Engelhardt; builder, U. Maurer.

Hope St., n e cor. Sixth St., five-st'y and basement brick factory, tin roof; cost, $22,000; owner, James Cavanagh, 54 South Sixth St.; architect, C. C. Buck.

Stanhope St., No. 55, n s, 250′ e Evergreen Ave., two-st'y frame (brick-filled) dwell., tin roof; cost, $3,000; owner and builder, E. C. Bauer, 22 Stanhope St.

Rockaway Ave., n w cor. Atlantic Ave., 2 four-st'y brick stores and tenements, tin roofs; cost, each, $3,500; owner, Peter H. Ahlers, 385 Atlantic Ave.; architect, B. H. Ahlers.

Gwinett St., Nos. 95, 97 *and* 99, n s, 3 three-st'y brick tenements, two with stores, tin roofs; cost, $5,500; owners, Marx & Wachschlager, rear of above premises; architect, H. Vollweiler.

Bushwick Ave., e s, 50′ s Prospect St., four-st'y frame (brick-filled) stores and tenement, tin roof; cost, $5,000; owner, Jacob Klein, 449 Bushwick Ave.; architect, H. Vollweiler.

South Ninth St., No. 213, being 75′ e Sixth St., three-st'y brown-stone dwell., tin roof; cost, $9,000; owner, Richard Malone, 26 South Sixth St.; architect, E. F. Gaylor; builders, Thos. Gibbons and S. M. Weeks.

Gwinnett St., No. 136, s s, 122′ e Harrison Ave., three-st'y frame (brick-filled) tenement, tin roof; cost, $4,000; owner and architect, G. Nitzer, on premises.

Duryea St., s s, 225′ e Broadway, two-st'y frame (brick-filled) dwell., tin roof; cost, $3,000; owner, C. de Loraine, 1155 Broadway; architect and builder, C. L. Johnson's Sons.

Union St., s s, 80′ w Fifth Ave., one-st'y brick rink, felt and sand roof; cost, $15,000; owner, John Devlin, Fulton St.; architect, E. F. Gaylor; builders, F. & J. Kelly and Jno. Fallon.

Schenck St., Nos. 11 *and* 13, e s, 100′ s Flushing Ave., four-st'y brick factory, tin roof; cost, $20,000; owner, P. Frederick Lenhart, 88 Classon Ave.; architect, G. W. Anderson; builder, J. D. Anderson.

Heyward St., n s, 80′ w Bedford Ave., 5 three-st'y brick tenements, tin roofs; cost, each, $8,000; owner and builder, Richard Healy; architect, I. D. Reynolds.

Monroe St., n s, 197′ e Throop Ave., 5 two and three st'y dwells., tin roofs; cost, each, $5,000; owner, Henry de Zavala, 411 Monroe St.; architect and builder, George B. Stoutenburg.

Sumner Ave., s e cor. Ellery St., three-st'y frame store and tenement (brick-filled), tin roof; cost, $5,450; owner, Mr. Gross, 75 Debevoise St.; architect, H. Vollweiler.

Adams St., s s, 100′ w Evergreen Ave., three-st'y frame tenement (brick-filled), tin roof; cost, $5,000; owner, Michael Munz, 171 Myrtle St.; architect, H. Vollweiler.

Nineteenth St., s s, 325′ e Sixth Ave., four-st'y brick tenement, tin roof; and *Twentieth St.*, n s, 325′ e Sixth Ave., four-st'y brick tenement, tin roof; total cost, $18,000; owner, John Weeber, 25 Willow Pl.; architects, M. Freeman's Sons; builders, J. J. Cody and M. Freeman's Sons.

Twenty-second St., n s, 160′ e Fifth Ave., three-st'y brick schoolhouse, tin roof; cost, $10,000; owner, St. John Roman Catholic Church, 250 Twenty-first St.; architect, Wm. Schickel.

Jefferson St., s s, 290′ e Throop Ave., 12 three-st'y brown-stone dwells., felt and gravel roofs, wooden cornices; cost, each, $5,000; owner and architect, Wm. V. Studdiford, 82 Woodhull St.

Monroe St., s s, 267′ w Reid Ave., 2 two-st'y brick dwells., tin roofs, wooden cornices; cost, each, $4,000; owner, etc., Thomas Miller, 650 Monroe St.

ALTERATIONS. — *Lefferts Pl., No.* 119, one-st'y brick extension, tin roof, brick cornice; cost, $5,000; owner, Joseph H. Bearns, on premises; architect, J. Kastner; builder, not selected.

Chicago.

HOUSES. — Burling & Whitehouse, architects, have plans ready for a three-st'y dwell., 66′ x 84′, at n w cor. of Michigan Ave. and Thirty-third St., for J. Cudahy; to be constructed of Connecticut Longmeadow stone; cost, $125,000.

BUILDING PERMITS. — E. Ganot, three-st'y dwell., 325 Twenty-second St.;cost, $6,000; builder, W. Reinert.

Board of Education, three-st'y schoolhouse, 161 North Sangamon St.; cost, $32,000; architect, J. J. Flanders.

H. Jordan, three-st'y store and flats, 883 Polk St.; cost, $5,500; architects, Strippelman & Co.

J. F. Walsh, stable, 90 North Market St.; cost, $5,000.

Backenhues & Mueseler, four-st'y factory, 95 and 97 Indiana St.; cost, $10,000; architect, F. Keltenick.

Wm. Haffmayer, two-st'y dwell., 2727 Portland Ave.; cost, $2,700.

J. Raber, three-st'y store and dwell., 2296 State St.; cost, $8,500; architect, J. Frank.

C. O'Shea, two-st'y dwell., 809 West Indiana St.; cost, $3,500.

H. Simons, two-st'y dwell., 523 West Congress St.; cost, $5,000; architects, Wheelock & Clay.

J. T. Stewart, 3 cottages, 664 to 670 Rockwell St.; cost, $2,700.

D. C. Starrett, two-st'y dwell., 927 Thirty-eighth St.; cost, $2,500.

G. Watson, five-st'y warehouse, 121 and 123 Michigan St.; cost, $26,000.

W. M. Dee, three-st'y store, 22 Quincy St.; cost, $7,000; architect, W. A. Furber.

G. A. Johnson, three-st'y store and flats, 938 West Lake St.; cost, $5,500; architects, Wilson & Moody.

P. Adams, three-st'y store and flats, 357 Hurlbut St.; cost, $3,000; architect, A. G. Boes.

J. Samuel, two-st'y dwell., 129 Osgood St.; cost, $2,500.

H. M. Kinsley, four-st'y restaurant-building, Adams St.; cost, $125,000; architect, F. L. Charnley.

J. Banholzer, three-st'y store and flats, 133 West Randolph St.; cost, $7,000; architect, E. Sarbell; builders, Lund & Gilbert.

G. Ludwig, two-st'y store and flats, 106 Smith St.; cost, $5,000; builder, F. Kirchoff.

W. H. Aldrich, 2 three-st'y flats, 49 and 51 Ann St.; cost, $14,000; architect, J. Vigant.

P. Clifford, two-st'y dwell., 184 North Wood St.; cost, $2,600; builder, J. McGee.

Wm. Anderson, two-st'y dwell., 3029 Portland Ave.; cost, $4,000.

G. Viehweg, three-st'y factory, 266 and 268 Clinton St.; cost, $10,000.

J. Bobka, three-st'y store and dwell., 657 Throop St.; cost, $8,000.

W. Goldsmith, 2 three-st'y flats, 316 and 318 North State St.; cost, $8,000; architect, F. H. Waschor; builder, L. Weick.

J. John, 2 two-st'y stores and flats, 546 West Madison St.; cost, $2,500; architect, M. L. Bears; builders, G. Lehman & Son.

New York.

FLATS. — For Mr. John D. Raest, Jr., 2 five-st'y flats, with stores, 25′ x 70′ each, are to be erected on the w s of Third Ave., near One Hundred and Third St., at a cost of about $30,000, from designs of Messrs. Hugo Kafka & Co.

A five-st'y flat, of stone, brick and terra-cotta, 25′ x 89′, is to be built at No. 117 East Fifty-third St., at a cost of $22,000, for Mrs. Jane E. Cusick, from designs of Mr. R. Rosenstock.

For Mr. Mark Rinaldo, 4 five-st'y brick, stone and terra-cotta flats, 25′ x 90′ 6″ each, are to be built on the n s of Thirty-third St, 81′ e of Third Ave., to cost $100,000, from plans of Messrs. A. B. Ogden & Son.

HALL. — For the Washington Heights Building Association, Mr. Carl Pfeiffer is preparing plans for a 75′ x 100′ building for a bank, library and club-rooms, to be built on Tenth Ave., between One Hundred and Fifty-sixth and One Hundred and Fifty-seventh Sts., at a probable cost of about $40,000.

STORES.—On the n e cor. of Broadway and Fifty-third St., 5 brick and stone-trimmed stores, about 20′ x 80′ each, are to be built for Mrs. C. Rusch, from designs of Mr. Chas. C. Haight.

BUILDING PERMITS. — *Broome St., No.* 438, five-st'y brick store, tin roof; cost, $30,000; owner, Miss Jane Major, 147 Second Ave., and others; architect and builder, E. Kilpatrick.

Cherry St., No. 336, five-st'y brick tenement, tin roof; cost, $16,000; owner and builder, John Totten, 240 West Forty-ninth St.; architect, M. Louis Ungrich.

East Houston St., Nos. 327 *and* 329, 2 five-st'y brick tenements, tin roofs; cost, each, $19,000; owner, Solomon Jacobs, 195 East Broadway; architect, Henry Herter.

East Broadway, No. 94, six-st'y brick tenement, tin roof; cost, $14,000; owner and architect, same as last.

King St., No. 4, five-st'y brick tenement, tin roof; cost, $9,000; owner, Amelia M. Large, 679 Greene Ave., Brooklyn; architects, Gilbert & Thompson.

Ludlow St., No. 69, three-st'y brick synagogue, tin roof; cost, $18,000; owner, Congregation of Beth Hamedrish Hadogal, Meyer Freeman, President, 32 Ludlow St.; architect, Wm. Graul.

Mulberry St., No. 126, five-st'y brick store and tenement, tin roof; cost, $9,500; owner, Joseph L. Schofield, West Farms, Twenty-fourth Ward; architect, A. Spence.

Norfolk St., No. 29, five-st'y brick tenement, tin roof; cost, $18,000; owner, Morris Rosendorff, 50 Eldridge St.; architect, Chas. Rentz.

East Fourth St., No. 81, five-st'y brick tenement, tin roof; cost, $18,000; owner, Wm. Pilgrim, 75 East Third St.; architect, Jobst Hoffmann.

Forty-sixth St., n s, 443′ 6″ w Eighth Ave., 8 three-st'y and basement brown-stone front dwells., tin roofs; cost, each, $12,500; owner, John Livingston, 981 Lexington Ave.; architect, F. T. Camp.

Ave. A, e s, 75′ s Fifty-seventh St., five-st'y brick brewery, tin roof; cost, $20,000; owners, Schmidt &

Schwanenfluegel, 163 East Fifty-ninth St.; architects, A. Pfund & Son.

Ave. A, e s, 75′ s Fifty-seventh St., one-st'y brick boiler-house, tin roof; cost, $4,000; owners, Schmidt & Schwanenfluegel, 163 East Fifty-ninth St.; architects, A. Pfund & Son.

West Seventeenth St., Nos. 321 *and* 323, 2 five-st'y brick tenements, tin roofs; cost, each, $15,000; owner, George Shepherd, 322 West Twenty-second St.; architect, Jos. M. Dunn; builders, N. Andruss and O. T. Mackey.

East Nineteenth St., No. 202, two-st'y brick dwell., gravel roof; cost, $3,000; owner, Aaren Herschfeld, 156 East Seventy-ninth St.; architect, P. H. Spelman; builders, Spelman & Co.

Seventy-third St., n s, 87′ 6″ w Fourth Ave., 5 four-st'y brick and stone dwells., tin and slate roofs; cost, $20,000 to $23,000 each; owner and architect, John G. Prague, 47 Bible House.

One Hundred and Fourth St., n s, 18′ w Fourth Ave., 4 three-st'y and basement brown-stone front dwells., tin roofs; cost, each, $8,000; owner, architect and builder, Wm. Fernschild, 324 East One Hundred and Fourteenth St.

One Hundred and Tenth St., n s, 52′ e Lexington Ave., one-st'y brick carriage-house, tin roof; cost, $13,000; owner, John H. Fiedeman, cor. Lexington Ave. and One Hundred and Tenth St.; builder, Henry Antonius.

Alterations. — Mr. Wm. Schaus, of Fifth Avenue, will have his residence altered and an art-gallery added, from designs of Mr. G. Martin Huss.

The Stock Exchange will have only some trifling interior alterations made from plans of Mr. I. R. Thomas.

The piano-factory of Messrs. Sohmer & Co., on the n w cor. of Fourteenth St. and Third Ave., is to be altered at a cost of $10,000, from plans of Messrs. Berger & Baylies.

Front St., No. 2, raise one and a half st'y, new flat roof; cost, $4,500; owner, estate of D. V. H. Floyd, Wm. Cruikshank, agent, 3 Pine St.; architect, W. H. Berrian.

Forty-second St., Nos. 231 *and* 235, upper story walls, front and rear rebuilt; cost, $20,000; owner, R. W. de Forest, exr., estate Ben. Wakeman, 120 Broadway; architect, A. Namur; builders, V. J. Hedden & Sons.

Third Ave., n e cor. Eighty-first St., four-st'y brick extension, tin roof, interior alterations, and front rebuilt; cost, $10,000; owner, Matthew Murphy, 200 East Twenty-eighth St.; architect, M. C. Merritt.

Orchard St., No. 20, one-st'y brick extension, tin roof, interior alterations, etc.; cost, $3,500; owner, Isaac Schenker, 20 Essex St.; architect, Wm. Graul.

First Ave., n e cor. Fifty-seventh St., four-st'y brick extension, tin roof, alteration, basement and tenement above; cost, $11,000; owner, Chas. Zebbardi, First Ave., s e cor. Fifty-eighth St.; architect, Max. Lehroff.

Bowery No. 49, one-st'y brick extension, tin roof; cost, $5,000; owner, L. Reinken, 42 Bowery; architect, J. Hoffman.

Madison St., No. 112, altered to a full three-st'y flat, new iron stoop, and other iron-work; cost, $3,000; owner, Isaac Rinaldo, 52 Catharine St.; architects, Ebeling & Heinike.

Tenth Ave., Nos. 927-931, five-st'y brick extension, altered to stores and tenements, fronts rebuilt, etc.; cost, $12,000; owner of Nos. 927 and 929, Henry Schweckendick, 322 Tenth Ave.; owner of No. 931, Emil C. G. von Pein, 824 Tenth Ave.; architect, Jas. W. Cole; builder, J. Jordan.

Philadelphia.

Manufacturing Building. — H. Muhr & Sons are about erecting a building for manufacturing purposes at the south-west corner of Broad and Race Sts. The building will be in the form of the letter L, six stories in height, with a basement, and will have a frontage on Broad St. of 100′, and extend in depth 140′ on Race St. with a width of 45′, and a wing at the west end of the lot the same height, 54′ 6″ in length and 45′ in width. The front of the building will be of selected stretchers laid in red mortar; the base will be rock-face and sandstone; the window, door and pilaster trimmings will be blue marble. The building will have three projecting towers at the corners 105′ high. The entrance to the yard area, a space of 51′ x 65′, is on Race St., and is guarded with heavy iron gates. The power will be transmitted to each floor by means of large pulleys entirely enclosed in a brick belt or pulley shaft extending the entire length of the building, and so arranged that it can be detached on any floor at will. The engine employed will be 100 horse-power, and the boilers 180 horse-power. The entire building will be provided with the electric light. Walter Geissenger is the architect and will superintend the erection.

Building Permits. — *Terrace St.*, n w cor. Seville St., three-st'y dwell., 24′ x 56′; Patrick Powers, owner.

Foulkrod St., below Tackawanna St., two-st'y dwell., 16′ x 30′; M. E. Mabrey, contractor.

Huntingdon St., below Fourth St., 4 two-st'y dwells., 15′ x 42′; Clancy & Stewart, contractors.

Fourth St., s w cor. Huntingdon St., three-st'y dwell., 16′ x 55′; Clancy & Stewart, contractors.

Huntingdon St., s w cor. Ormes St., three-st'y dwell., 15′ x 50′; Clancy & Stewart, contractors.

Huntingdon St., below Fillmore St., 2 two-st'y dwells, 14′ x 42′; Elizabeth Hanson, owner.

Vine St., No. 518, four-st'y store, 21′ x 100′; Yarnall & Cooper, contractors.

Warnock St., below Somerset St., 6 two-st'y dwells., 12′ x 40′; L. K. Slifed, contractor.

Thirtieth St., below Poplar St., 10 two-st'y dwells., 15′ x 46′; Wm. H. Bilyue, contractor.

Brown St., w of Thirteenth St., 5 three-st'y dwells., 12′ x 30′; Wm. Holloway, owner.

Atmore St., w of Thirteenth St., 3 two-st'y dwells., 12′ x 30′; Wm. Holloway, owner.

Twenty-fourth St., s e cor. Brown St., three-st'y store and dwell., 20′ x 48′; I. Black, contractor.

Palethorp St., Nos. 2531 *to* 2541, 6 two-st'y dwells., 14′ x 30′; Patrick Nolan, owner.

Thirty-first St., cor. Stiles St., 17 two-st'y dwells.' Wm. Steele, contractor.

Second St., below Indiana Ave., e s, two-st'y factory, 50′ x 100′; Wm. Steele, contractor.

Franklin St., above Cumberland St., 17 two-st'y dwells., 15′ x 44′; M. Le Heist, owner.

East side of 8th St., above Cumberland St., 6 two-st'y dwells., 15′ x 45′; M. L. Heist, owner.

Market St., Nos. 610 *and* 612, 5 st'y addition to store: Jas. B. Doyle, Contractor.

St. Louis.

Building Permits. — One hundred and thirteen permits have been issued since our last report, twenty-five of which are for unimportant frame houses. Of the rest those worth $2,500 and over are as follows:—

F. W. Risque, three-st'y brick dwell.; cost, $5,000; Kirchner & Bro., architects; B. Stock, contractor.

D. Broemswig, two-st'y brick store and dwell.; cost, $5,000; Jno. H. Frye, contractor.

Mrs. R. S. Caldwell, two-st'y brick dwell.; cost, $3,500; J. B. Legg, architect; S. S. Jones, contractor.

J. D. Macadaras, 4 adjacent two-st'y brick tenements; cost, $4,500; George I. Barnett, architect; O'Malley Bros., contractors.

J. D. Macadaras, 4 adjacent two-st'y brick tenements; cost. $4,500; George I. Barnett, architect; O'Malley Bros., contractors.

J. D. Macadaras, 3 adjacent, two-st'y brick stores and tenements; cost, $3,000; George I. Barnett, architect; O'Malley Bros., contractors.

Joseph Grumminger, two-st'y double brick tenement; cost, $3,600; Berkemeier & Rieckmann, contractors.

Theresa Bunn, two-st'y brick dwell.; cost, $3,500; Wm. Whiting, contractor.

Martha Obrecht, two-st'y brick dwell.; cost, $2,900; Wm. Whiting, contractor.

Wm. Whiting, two-st'y brick dwell.; cost, $2,700; Wm. Whiting, contractor.

Francis Flynn, two-st'y double brick dwell.; cost, $4,500; T. J. Gunn, contractor.

Thomas Roach, two-st'y brick dwell.; cost, $2,500; T. Roach, contractor.

J. G. Brandt, altering four-st'y brick stores; cost $5,000; A. Beinke & Co., architects; Diestelkamp & Bros., contractors.

R. S. Stevenson, 3 adjacent two-st'y brick dwells. cost, $9,000; T. H. Goss, contractor.

T. F. Maloney, 5 two-st'y double dwells.; cost, each, $6,000; T. H. Goss, contractor.

T. J. Quinn, two-st'y double dwell.; cost, $6,000; T. H. Goss, contractor.

B. Spellbrink, two-st'y brick dwell.; cost, $3,000; T. H. Goss, contractor.

Henry Schaub, two-st'y brick dwell.; cost, $3,700; B. Heber & Co., contractors.

Henry Goodman, two-st'y brick dwell.; cost, $3,000; Milburn & Rich, contractors.

A. Whri, two-st'y brick tenement; cost, $3,000; A. Whri, contractor.

Charles H. Turner, two-st'y brick car-stable; cost, $22,000; Milburn & Rich, contractors.

P. T. Clarke, 2 adjacent two-st'y brick dwells.; cost, $5,000; Jas. H. McNamara, architect; Jno. J. McMahon, contractor.

Jas. Martland, 2 adjacent two-st'y brick tenements; cost, $5,000; C. F. Aufderheide, contractor.

D. K. Ferguson, three-st'y brick store and dwell.; cost, $6,500; H. Grable & Co., architects; R. P. McClure, contractor.

F. W. Obermeyer, 2 adjacent two-st'y dwells.; cost, $6,000; Chas. May, architect; Burman & Alwing, contractor.

Charles Wunderlick, two-st'y double brick tenement; cost, $2,600; Burnam & Alwing, contractors.

J. H. Bruggermann, two-st'y brick dwell.; cost, $4,500; Wm. Gahl, contractor.

Louis Seidel, two-st'y brick dwell.; cost, $4,300; E. Janssen, architect; Remmers & Thompson, contractors.

John Gruen, two-st'y brick dwell.; cost, $4,300; E. Janssen, architect; Remmers & Thompson, contractors.

Britton A. Hill, two-st'y brick tenement; cost, $3,000; L. Anslyne, contractor.

Henry H. Vogt, two-st'y brick dwell.; cost, $5,400; W. Kerksieck, contractor.

C. Urnply, two-st'y brick dwell.; cost, $6,000; C. Urnply, contractor.

M. & J. Devlin, 2 adjacent two-st'y brick dwells.; cost, $3,000; F. Bayer, contractor.

G. Meyer, 3 adjacent two-st'y brick stores; cost, $8,500; Kirchmer & Bro., architects; J. V. Majors, contractor.

Chas. H. Turner, one-st'y car-shed; cost, $8,000; Milburn & Rich, contractors.

J. A. Harris, two-st'y brick dwell.; cost, $3,025; Aufderheide & Dekemper, contractors.

H. Temme, two-st'y brick stable; cost, $2,500; Jas. Stewart, architect; C. H. Poertner, contractor.

J. C. Engel, two-st'y brick dwell.; cost, $3,500; B. J. Goesse, architect; C. H. Poertner, contractor.

Henry Bostelmann, two-st'y brick dwell.; cost, $2,800; C. H. Poertner, contractor.

J. E. Ryan, 3 adjacent two-st'y brick dwells.; cost, $4,500; T. W. Brady, architect; J. F. Lenergan, contractor.

C. Brochmeier, two-st'y brick store and tenement; cost, $4,000; Henry Franke, contractor.

J. M. Figusa, two-st'y brick tenement; cost, $3,500; T. J. Kelly, contractor.

Phil. Fiorreich, two-st'y brick tenement; cost, $3,000; G. Hubert, contractor.

J. Adams, 3 adjacent two-st'y brick dwells.; cost, $6,500; contract sublet.

J. Adams, two-st'y brick store and dwell.; cost, $3,000; contract sublet.

J. Neuhaus, one-st'y brick dwell.; cost, $2,500; F. Knittel, contractor.

A. Schroeder, altering a two-st'y brick dwell.; cost, $2,600; F. Knittel, contractor.

F. A. Brinkmeyer, two-st'y brick dwell.; cost, $8,000; H. Brinkmeyer, contractor.

H. A. Parker, 3 two-st'y brick dwells.; cost, each, $4,400; S. H. Hoffmann, contractor.

Sovenz Meyer, 2 adjacent two-st'y brick tenement; cost, $3,500; H. Hoffmeyer, contractor.

St. Paul, Minn.

Building Permits. — *St. Peter St.*, three-st'y brick store; cost, $8,000; Chas. Horst, owner; D. W. Millard, architect.

West Seventh St., three-st'y brick block; cost, $15,000; owner, Geo. Rochate; architect, W. H. Castner.

Summit Ave., two-st'y frame dwell.; cost, $5,000; owner, Capt. Chas. E. Davis.

Toledo.

Dwelling-Houses. — For John Berdan, Esq., two-st'y and basement dwell., built of pressed-brick, with cut-stone finish; designed by E. O. Fallis & Co.

Frame house for T. D. Parker, Esq.; cost, $4,000; E. O. Fallis & Co., architects.

Dwell. for E. B. Hall, Esq., cor. Eighteenth and Monroe Sts.; cost, $8,000; E. O. Fallis & Co., architects.

Insane Asylum. — Toledo Insane Asylum, thirty-six buildings under contract; accommodations for one thousand patients; built upon the pavilion plan, foundations partly in; probable cost, $600,000; designed by E. O. Fallis and J. W. Yost.

School-Building. — Toledo Manual Training School; cost, $30,000; E. O. Pallis & Co., architects.

COMPETITION.

Ladies' College.

[At Montreal, Can.]
22 St. John Street,
Montreal, February 20, 1885.

The Trustees of the Trafalgar Institute, being desirous of erecting a building for the purposes of a ladies' college, invite architects to submit plans and estimates for the same.

Full particulars as to site, etc., can be had by applying to the undersigned.

Plans, etc., to be submitted **not later than 1st of April next.**

ALEX. F. RIDDELL,
482 Secretary Trafalgar Institute.

City-Hall.

[At Richmond, Va.]
February 16, 1885.

Proposals are invited **until June 1st, 1885,** for furnishing designs for a city-hall upon which premiums will be paid as follows: —

For first best design, $700.

For second best design, $300.

The Committee on Grounds and Buildings of the City Council reserves the right to reject any and all designs.

For information address the undersigned.

487 W. E. CUTSHAW, City Engineer.

Toronto Court-House.

[At Toronto, Ont.]
City Clerk's Office,
Toronto, Ont., March 4, 1885.

CHANGE OF TIME AND CONDITIONS.

Notice is hereby given that the following amendments have been made to the Instructions to Architects previously issued, viz.: —

(1) That the clause providing for the building being erected in Canadian material be struck out.

(2) That all designs for which premiums are awarded shall be and remain the property of the designer, instead of becoming the property of the city, except the one which is accepted for the erection of the building.

(3) That no prize be awarded to any plan the carrying out of which will exceed $200,000.

(4) That the time for the reception of plans be extended **until the 23d of April, 1885.**

JOHN BLEVINS,
482 City Clerk.

PROPOSALS.

Elevators.

[At Cincinnati, O.]
Office of Supervising Architect,
Treasury Department,
Washington, D. C., February 28, 1885.

Sealed proposals will be received at this office **until 2 P. M., on the 28th day of March, 1885,** for furnishing and erecting complete, in the custom-house and post-office building at Cincinnati, O., two hydraulic passenger-elevators, two mail-elevators, and one ash-lift, in accordance with drawings and specification, copies of which and any additional information may be had on application at this office or the office of the superintendent.

Bids must be accompanied by a certified check for $1,000, drawn to the order of the Secretary of the Treasury, as a guarantee that the bidder will enter into a contract, if his bid is accepted, and furnish a bond equal to the amount of the contract.

Bids received after the time of opening will not be considered.

M. E. BELL,
482 Supervising Architect.

Stone and Brick Work.

[At Denver, Col.]
Office of Supervising Architect,
Treasury Department,
Washington, D. C., March 12, 1885.

Sealed proposals will be received at this office **until 2 P. M., on the 13th day of April, 1885,** for furnishing the labor and materials, and building complete the stone and brick masonry of walls of superstructure of the court-house and post-office building at Denver, Col., in accordance with drawings and specification, copies of which may be seen and any additional information obtained at this office or the office of the superintendent.

Bids must be accompanied by a certified check, drawn to the order of the Secretary of the Treasury, as a guarantee that the bidder will enter into a contract if his bid is accepted, and furnish a bond equal to the amount of the contract.

Bids received after the time of opening will not be considered.

M. E. BELL,
483 Supervising Architect.